DRAFT
Lower Duwamish Waterway Source Control Status Report 2019

June 2021

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Lower Duwamish Waterway Source Control Status Report
2019

Produced by

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Table of Contents

Appendices

Figures

Tables

Acronyms and Abbreviations

2LAET	Second Lowest Apparent Effects Threshold
BDC	Boeing Developmental Center
BEHP	bis(2-ethylhexyl)phthalate
BMP	best management practice
CAP	Cleanup Action Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chemical of concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSL	cleanup screening level
CSO	combined sewer overflow
CVOC	chlorinated volatile organic compounds
DCE	dichloroethene
DW	dry weight
EAA	early action area
Ecology	Washington State Department of Ecology
EMF	Electronics Manufacturing Facility
EOF	emergency overflow
EPA	U.S. Environmental Protection Agency
ESD	explanation of significant differences
FS	feasibility study
GSC	Grand Street Commons
GTSP	Georgetown Steam Plant
HPAH	high molecular weight polycyclic aromatic hydrocarbon
HWTR	Hazardous Waste & Toxics Reduction
IAA	Insurance Auto Auctions
IAWP	Interim Action Work Plan
ICS	Industrial Container Services
ISCO	in-situ chemical oxidation
ISGP	Industrial Stormwater General Permit
KCIA	King County International Airport
KCIW	King County Industrial Waste
LAET	Lowest Apparent Effects Threshold
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group
LPAH	low molecular weight polycyclic aromatic hydrocarbon
MBHA	Mount Baker Housing Association
MFC	Military Flight Center
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MS4	municipal separate storm sewer system
MTCA	Model Toxics Control Act
NBF	North Boeing Field

Acronyms and Abbreviations (Continued)

ng/kg	nanograms per kilogram
NPDES	National Pollutant Discharge Elimination System
ND	not detected
OC	organic carbon
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene (or perchloroethylene)
PLA	Pollutant Loading Assessment
PLP	potentially liable person
QAPP	Quality Assurance Project Plan
RAL	remedial action level
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RM	river mile
ROD	Record of Decision
SCAP	Source Control Action Plan
SCIP	Source Control Implementation Plan
SCO	sediment cleanup objective
SD	storm drain
SEPA	State Environmental Policy Act
SIM	Seattle Iron and Metals
SIU	significant industrial user
SMS	Washington State Sediment Management Standards
SPU	Seattle Public Utilities
SVOC	semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TAC	Technical Advisory Committee
TCE	trichloroethene
TCP	Toxics Cleanup Program
TEQ	toxic equivalent
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
UST	underground storage tank
VC	vinyl chloride
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WQ	Water Quality
WSDOT	Washington State Department of Transportation

Executive Summary

This report summarizes source control activities conducted by the Lower Duwamish Waterway (LDW) Source Control Work Group between January 1 and December 31, 2019. Previous status reports provided an overview of the LDW site and a summary of source control activities conducted between 2003 and December 2018. This report contains updated information related to LDW source control, including:

- The status of source control action items, business inspections, and source tracing activities;
- The status of site assessments and cleanups;
- Other source control activities conducted during 2019 at each of the 24 identified source control areas.

Source Control Action Items

Ecology grouped the 24 source control areas that drain to the LDW Superfund site into three larger sub-areas: upper reach, middle reach, and lower reach. Ecology developed Source Control Action Plans (SCAPs) for each of the 24 source control areas between February 2003 and September 2013. The SCAP for each source control area includes a list of action items needed to identify and control contaminant sources.

A total of 710 source control action items have been identified as of the end of 2019; 507 of these action items (71 percent) have been completed or were no longer necessary, as specified below by priority:

- 140 of 186 high priority action items (75 percent) have been completed;
- 217 of 331 medium priority action items (66 percent) have been completed;
- 150 of 193 low priority action items (78 percent) have been completed.

The status of action items that have been updated to completed or canceled during the current reporting period are listed in Appendix B[1], Table B-1. The current status of action items is shown in Figure ES-1[2].

A total of 46 high priority action items remain to be completed (Appendix B, Table B-2); of these, 17 action items are in the upper reach, 18 are in the middle reach, and 11 are in the lower reach. High priority action items that are not yet complete are listed in Table ES-1 at the end of this section[3].

[1] More information is needed to update the status of action items that were competed or canceled during 2019. This information will be incorporated into the Final Source Control Status Report.
[2] Not provided. Figure ES-1 will be included with the final version of this Source Control Status Report.
[3] Not provided. Table ES-1 will be included with the final version of this Source Control Status Report. Appendix B, Table B-2 lists all incomplete action items, including high priority action items.

Source Control Implementation

Business inspections and source tracing efforts continued during 2019. During the current reporting period, Ecology's Water Quality (WQ) and Hazardous Waste & Toxics Reduction (HWTR) inspectors and Ecology Toxics Cleanup Program (TCP) staff continued to coordinate facility inspections and priorities with Seattle Public Utilities (SPU) and King County inspectors to avoid overlap in the field. SPU conducted 204 inspections/site visits at 147 facilities in 2019 (Appendix C). King County Industrial Waste inspects significant industrial users operating under a waste discharge permit once per year, and other industrial users at least every five years; a total of 30 inspections were conducted at 28 facilities in 2019 (Appendix D, Table D-1). King County Stormwater Services conducted 40 source control inspections at 28 facilities in unincorporated areas of the LDW basin in 2019 (Appendix D, Table D-2). Ecology's Water Quality Program conducted 48 inspections at 40 facilities during 2019 (Appendix E, Table E-1).

Source tracing activities also continued during the current reporting period. SPU and King County collected in-line storm drain sediment trap and grab samples and storm drain catch basin grab samples. King County collected solids samples in combined sewers and at King County International Airport (KCIA) (Appendix F and Appendix G).

Site characterization or cleanup is in progress at several facilities that are known or suspected threats to LDW sediments. The U.S. Environmental Protection Agency (EPA) is managing sites under the Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and/or the Toxic Substances Control Act (TSCA). EPA is managing the Rainier Commons, Slip 4, Boeing Former Electronics Manufacturing Facility (EMF), Boeing Plant 2, Jorgensen Forge outfall site (completed in 2018) and sediment site, Former Rhone-Poulenc, and Terminal 117 sites (See Table 2-6).

Ecology's TCP is managing the following sites under the Model Toxics Control Act (MTCA): 8801 Site, Boeing Field Chevron, Boeing Developmental Center, Boeing Isaacson Thompson, Crowley Marine (8th Avenue Terminals), Douglas Management Dock, Duwamish Marine Center, Duwamish Shipyard, Emerald Gateway, Fox Avenue Building, Glacier Northwest/ Reichhold Chemical, Industrial Container Services (ICS), Jorgensen Forge (upland of the EPA-managed area), North Boeing Field/Georgetown Steam Plant (NBF-GTSP), North Terminal 115, Snopac Property, South Park Landfill, South Park Marina, and the Whitehead Tyee Site. Ecology's HWTR Program is managing the following cleanup sites: Burlington Environmental/ East of 4th Site, West of 4th Site, and General Electric-Dawson Street Plant (See Table 2-7).

Other source control activities in progress or completed during this period include the following:

- Ecology and EPA continued work on the Pollutant Loading Assessment (PLA) for the Green-Duwamish watershed.
- SPU and King County cleaned storm drain lines.
- SPU tested additional treatment options for use at the planned South Park Water Quality Facility to treat stormwater runoff from the 7th Avenue S drainage system.
- King County continued to implement combined sewer overflow (CSO) control projects in the LDW: West Duwamish Wet Weather Storage, Georgetown Wet Weather Treatment Station, and Rainier Valley Wet Weather Storage and conveyance improvements.

Major source control activities completed during this reporting period are summarized below by source control area[4]. Additional information is provided in Sections 3 through 5.

[4] Not provided. Will be included in the final Source Control Status Report.

1.0 Introduction

This Source Control Status Report summarizes the source control activities conducted by the Lower Duwamish Waterway (LDW) Source Control Work Group[5] from January 1, 2019 through December 31, 2019. Previous status reports provided an overview of the LDW Superfund site, the strategy for controlling sources of pollutants to the LDW, the process for developing Source Control Action Plans (SCAPs), the methods and process for implementing SCAPs, issues associated with permitted discharges, and summaries of source control activities conducted between 2003 and December 2018 (Ecology 2007 [00021][6], 2008a [00065], 2008d [00068], 2009c [00090], 2011c [00095], 2012b [00098], 2013 [10359], 2014 [10620], 2018b [12005], 2019ac [12262] and 2020 [12420]).

This report updates relevant information related to LDW source control, including the status of source control action items; business inspections and source tracing activities conducted during the reporting period (2019); status of site assessments and cleanups; public involvement and outreach activities; and other source control activities conducted during the current reporting period. Detailed background information on individual source control areas is provided in the Summary of Existing Information and Identification of Data Gaps (Data Gaps Reports) and SCAP for each area, as referenced in the text.

Section 1.0 summarizes background information on the LDW Superfund site. Section 2.0 describes basin-wide source control activities. Sections 3.0, 4.0, and 5.0 describe site-specific source control activities for the upper, middle, and lower reach of the LDW, respectively. Section 6.0 contains a list of references.

Appendix A provides a folio with maps of each LDW source control area. Appendix B summarizes action items that were reported as complete during the current reporting period, and action items that have not yet been completed. Appendices C, D, and E list the Seattle Public Utilities (SPU), King County, and Washington State Department of Ecology (Ecology) source control inspections conducted during the current reporting period, respectively. Appendices F and G provide SPU and King County source tracing sample results for 2019.

1.1 Lower Duwamish Waterway Site

The LDW Superfund site is approximately 5 miles long and represents the downstream portion of the Duwamish River. The site extends from the southern tip of Harbor Island in Seattle, Washington, to just south of the turning basin near S 102nd Street in Tukwila, Washington (Figure 1-1). The source area is defined by the combined stormwater/sanitary sewer service area

[5] The Source Control Work Group includes the primary public agencies responsible for source control for the LDW: the Washington Department of Ecology, the City of Seattle, King County, the Port of Seattle, the City of Tukwila, the Puget Sound Clean Air Agency, the Washington State Department of Transportation and the U.S. Environmental Protection Agency.

[6] Numbers in brackets [xxxxx] refer to the LDW Source Control Document Number. For example, 'Ecology 2019a' is document number 11894. This number is provided to minimize confusion between documents with similar reference names.

and the separated stormwater drainage basins, and it encompasses 20,400 acres, or approximately 32 square miles.

Chemicals of concern (COCs) in the waterway include arsenic and other metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), dioxins/furans, phthalates, and other organic compounds. These chemicals pose a health risk to people, fish, and wildlife.

1.1.1 Lower Duwamish Waterway Sediment Cleanup

In December 2000, the Lower Duwamish Waterway Group (LDWG), composed of the City of Seattle, King County, the Port of Seattle, and The Boeing Company (Boeing), entered into an Administrative Order on Consent (AOC) for a Remedial Investigation/Feasibility Study (RI/FS). LDWG completed a remedial investigation (RI) and feasibility study (FS) for the LDW Superfund site in July 2010 and October 2012, respectively (Windward 2010 [00011]; AECOM 2012 [00099]).

In 2013, the U.S. Environmental Protection Agency (EPA) issued a Proposed Plan that included a summary of the cleanup alternatives and identified EPA's preferred cleanup option for the LDW (EPA 2013 [02415]). EPA issued a Record of Decision (ROD) for the site in November 2014 (EPA 2014 [12119]). The ROD provides an overview of the contamination present in the LDW, summarizes the associated risks to human health and the environment, describes the cleanup alternatives considered, and identifies EPA's Selected Remedy to address these risks.

The Selected Remedy is a component of an overall strategy for addressing contamination and the associated risks in the LDW. This strategy includes:

- Early identification and cleanup of the most contaminated areas in the LDW, referred to as early action areas (EAAs) (Figure 1-1),
- Controlling sources of contamination to the LDW, and
- Cleanup of the remaining contamination in the LDW, including long-term monitoring to assess the success of the remedy in achieving cleanup goals.

EPA proposed changes to some of the cleanup levels for carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in the Selected Remedy. This decision is based on the results of updated health risk information. EPA released the final Toxicological Review of Benzo(a)pyrene in January 2017. This review updated the 1987 Integrated Risk Information System (IRIS) cancer slope factor for benzo(a)pyrene and updated the health risk information for benzo(a)pyrene (BaP). The technical review indicated that the cancer risk associated with BaP is seven times less potent than previously estimated.

EPA uses BaP as an index to estimate cancer risk from exposure to mixtures of cPAHs. EPA prepared an Explanation of Significant Differences (ESD), since cPAHs, as a group, are a contaminant of concern for human health in the LDW. EPA shared the proposed ESD with the public in 2021. The ESD provides the basis for changes to the Selected Remedy. EPA will consider public comments on the proposed ESD, then they will issue a final ESD (EPA 2021a [12430], EPA 2021b [12429]).

The proposed changes affect the human cancer risk-based concentrations of cPAHs established in the ROD as remedial action levels (RALs) and cleanup levels to achieve remedial action objectives. The proposed changes to the cleanup levels for cPAHs include the following:

- The cPAH cleanup level for the top 10 cm of sediment in intertidal and subtidal areas will change from 380 to 2,800 µg/kg dry weight (DW) across the entire site.
- The cPAH cleanup level for the top 45 cm of sediment in intertidal potential clamming areas will change from 150 to 1,100 µg/kg DW across the entire site.
- The cPAH cleanup level for the top 45 cm of sediment in beach play areas will change from 90 to 590 µg/kg DW at individual beach play areas.
- The risk-based target clam tissue level for cPAHs will change from 0.24 to 1.5 µg/kg wet weight.
- The cPAH RAL in intertidal sediments will change from 900 to 5,000 µg/kg DW.
- The cPAH RAL in intertidal and subtidal sediments will change from 1,000 to 5,500 µg/kg DW.

EPA estimates that these changes will reduce active cleanup in the LDW by about five acres and it will reduce the cleanup cost estimate by about $1 million (EPA 2021b [12430], EPA 2021b [12429]).

The Selected Remedy will be implemented after cleanup of the EAAs has been completed, source control has been implemented that is sufficient to minimize recontamination, additional sampling and analyses have been conducted, and a remedy design has been completed.

1.1.2 Progress Toward Sediment Cleanup

Enhanced Natural Recovery/Activated Carbon Pilot Study

LDWG is conducting an enhanced natural recovery/activated carbon pilot study to evaluate the effectiveness and potential impacts of using this kind of treatment technology in the LDW, as well as to identify the areas that may be best suited for this technology (AMEC 2015 [11213]). This study will determine whether enhanced natural recovery material impregnated with granular activated carbon can be successfully applied to reduce the bioavailability of PCBs in remediating contaminated sediments in the LDW.

EPA completed the Year 2 data collection in fall 2019. The Year 2 results show that enhanced natural recovery, whether with active carbon or without, has reduced sediment contamination in the biologically active zone. Year 3 monitoring plans include a benthic survey and lab studies of PCB uptake in benthic organisms (Congdon 2019a [12427]).

Field work for the Year 3 testing was scheduled to start in the summer of 2020 and is expected to be completed by the end of September 2020. Additional tests will directly measure PCB uptake from sediments to organisms (EPA 2019d [12371], Congdon 2020b [12428]).

Pre-Design Baseline Studies

LDWG is conducting pre-design baseline studies to help EPA ensure that all Remedial Design data requirements are addressed in the correct sequence and schedule for the ROD implementation (Windward 2017 [11097]). The pre-design baseline studies establish post-EAA cleanup baseline conditions in environmental media as a starting point for comparison as the cleanup progresses under the ROD. The baseline data does not show where actions will need to

take place. This data shows current levels of contamination through the LDW for future comparison (EPA 2019c [12372]). The purpose of the pre-design baseline studies is to:

- Establish post-EAA cleanup baseline conditions in environmental media,
- Evaluate the effectiveness of EAA cleanups and the degree to which natural recovery has occurred since the RI/FS,
- Establish baseline data for comparison to post-remedial action data, and to
- Aid in the evaluation of source control.

Surface Water. LDWG conducted baseline surface water sampling during 2017 and 2018. The purpose of the surface water baseline study was to collect and analyze surface water samples to assess progress toward applicable or relevant and appropriate requirements for water quality and to establish baseline concentrations to be used to assess trends in PCB concentrations as sediment remediation and source control continues.

The surface water baseline study involved the collection of composite grab surface water samples during eight sampling events at two locations in the LDW, at river mile (RM) 0.75 and RM 3.3, and at one reference location upstream of the LDW at RM 10. In addition, passive samplers were deployed in the water column approximately 1 meter above the sediment surface at two locations (RM 2.1 and RM 3.3) during dry baseflow conditions (August 2017 and August 2018). These samplers were used to measure freely dissolved PCB concentrations in LDW surface water (Windward 2018a [11295]). LDWG submitted a final baseline surface water data report to EPA in April 2019 (Windward 2019d [12223]).

Surface Sediment. LDWG collected baseline samples of subtidal sediment and bank samples from February through June 2018. The baseline sediment sampling included the collection of 0-10 cm surface sediment throughout the LDW and the collection of 0-45 cm sediment samples in the intertidal potential clamming areas and the intertidal beach play areas. Baseline sediment samples for the PCB porewater investigation were also collected. The final Surface Sediment Data Report was submitted to EPA in February 2019 (Windward 2019a [12109]).

Clam Tissue. LDWG collected baseline clam tissue samples and co-located sediment samples in May 2018. The results of the baseline chemical analyses of clam and co-located sediment samples were presented in a final Clam Data Report in February 2019 (Windward 2019c [12104]). In addition to the clam tissue results, the Clam Data Report also included the results of the porewater investigation of carcinogenic PAHs (cPAHs).

Seeps. Seep sampling was performed in May/June 2018. The purpose of this effort was to collect and analyze seep samples to help Ecology identify sources and assess source control sufficiency. The baseline chemical analysis of seep water samples were described in a draft Baseline Seep Data Report (Windward 2018b [11442]). The Seep Data Report was finalized in March 2019.

Recovery Category Recommendations Report

LDWG used information obtained from the waterway user survey and assessment of in-water structures to develop recommendations for adjusting the recovery category assignments in the ROD. LDWG presented these recommendations in the Recovery Category Recommendations report they submitted to EPA in February 2019 (Integral 2019 [12242]).

Pre-Remedial Design Data Evaluation. The draft Pre-Remedial Design Data Evaluation Report summarizes and interprets LDW baseline sampling of sediment, water, fish, crabs, and clams that was conducted in 2017 and 2018. EPA reviewed the Draft Final Data Evaluation Report in 2019 (Congdon 2019a [12427]). This report was finalized in 2020 (EPA 2019d [12371]).

Design Strategy Recommendations. LDWG submitted the Design Strategy Recommendations report to EPA in February 2019 (Windward 2019b [12235]). This document presents a conceptual strategy for integrating and sequencing the LDW data gathering efforts and Remedial Design process. The design strategy draws upon the large body of environmental and physical data collected within the LDW over the past two decades. The design also incorporates findings from the LDW activated carbon pilot study and the pre-design baseline studies.

One of the key objectives of this report is to identify and delineate the data that need to be addressed early in the design process, data gathering that may occur throughout or later in design, and data needs that should be addressed by the selected construction contractor to support planning and execution of the cleanup. The Remedial Design development for each reach of the LDW cleanup will follow a phased approach that allows sufficient time for data gathering, engineering analyses, and agency and stakeholder review. The design strategy integrates the data needs with the Remedial Design framework and implementation assumptions. This framework is intended to be flexible and can be applied to different remedial action areas and construction staging and sequencing scenarios. The remedial strategy and schedule for the LDW cleanup will continue to be developed and evolve over time.

Pre-Design Investigation

In July 2018, LDWG signed an agreement to design the cleanup for the Upper Reach. This includes a Pre-Design Investigation Work Plan to refine cleanup areas and depths for design purposes. The purpose of the Pre-Design Investigation is to define where contaminants in the LDW sediments are above action levels that require active cleanup. LDWG continued working to design the cleanup for the Upper Reach in 2019 (EPA 2019c [12372], Congdon 2019a [12427]).

Pre-Design Investigation Work Plan

LDWG submitted the final Pre-Design Investigation Work Plan for the Upper Reach to EPA in December 2019 (Windward 2019g [12374]). The primary objective of this work plan is to describe the process to be used to collect the data needed to support detailed engineering designs for the Selected Remedy for the Upper Reach of the LDW.

There will be at least two phases of the Pre-Design Investigation. Each phase will include field sampling and a data evaluation report. The data obtained through field sampling in Phase 1 and Phase 2 of the Pre-Design Investigation will be used to develop the 30% preliminary Remedial Design. If data gaps remain after Phases 1 and 2 are complete, there will be a Phase 3 to fill the data gaps.

Pre-Phase 1 sampling took place in the spring of 2019. LDWG completed an updated bathymetric survey in the Upper Reach to understand the varying water depths and to produce updated maps of the bottom of the LDW. The updated bathymetry may be used to refine recovery category assignments.

LDWG submitted a Phase 1 Pre-Design Investigation Quality Assurance Project Plan (QAPP) to EPA in the fall of 2019. The QAPP describes the quality assurance objectives, sampling methods and locations, and requirements for laboratory analysis of the Pre-Design Investigation sampling (Windward 2019f [12375]).

Phase 1 sediment sampling to support the design of the Upper Reach cleanup started on June 1, 2020. Samples were collected from 266 locations at two or more sample depths. The phase 1 data will be used to delineate RAL exceedances and involves under-structure investigation sampling.

Phase 2 data collection will include sediment sampling that will help to further the refinement of cleanup areas and depths. The Phase 2 will focus mostly on areas where active remediation is indicated, assessing dredging depths, geotechnical data, and other information necessary for the design. Phase 2 sample locations will be identified in an addendum to the QAPP in the spring of 2021. Phase 3 sampling will take place in 2022 (EPA 2019c [12372], Windward 2019g [12374], Congdon 2020b [12428]).

Remedial Design Work Plan

LDWG started Remedial Design planning in February 2019. In December 2019 LDWG submitted the Remedial Design Work Plan for the Upper Reach to EPA (Anchor 2019e [12327]). The Remedial Design Work Plan describes the process that LDWG will use to develop detailed engineering designs for the Selected Remedy for the Upper Reach.

Remedial Design includes the activities needed to develop construction plans and specifications, general provisions, special requirements, and other technical documentation necessary to solicit bids for construction of the remedial action.

- The Preliminary (30%) Remedial Design will refine remedial action areas, select remedial technology, incorporate data from the Phase 1 and Phase 2 of the Pre-Design Investigation, and identify data gaps for a potential Phase 3 Pre-Design Investigation.
- The Intermediate (60%) Remedial Design will further design remedial actions, identify any remaining data gaps, collect Phase 3 Pre-Design Investigation data (if further data gaps are identified), and incorporate EPA input on the Preliminary (30%) Remedial Design.
- The Pre-Final (90%) Remedial Design will incorporate EPA input on the Intermediate (60%) Remedial Design and incorporate any data obtained during a potential Phase 3 Pre-Design Investigation.
- The Final (100%) Remedial Design package will incorporate EPA comments on the Pre-Final (90%) design and include final versions of all supporting design deliverables. LDWG expects to complete the 100% Remedial Design for the Upper Reach by 2024 (Anchor 2019e [12327], Windward 2019g [12374]).

Further information about the LDW sediment cleanup can be found at EPA's LDW website[7] and the LDWG website.[8]

1.2 Memoranda of Understanding and Agreement

EPA and Ecology signed an interagency Memorandum of Understanding (MOU) in April 2002, which was revised in 2004. The MOU defined federal and state responsibilities for the LDW (EPA and Ecology 2002 [00008], 2004 [00009]). Under the MOU, EPA is the lead agency for the sediment investigation and Ecology is the lead agency for coordinating and implementing source control. In November 2014, in conjunction with publication of the ROD, EPA and Ecology clarified their responsibilities in a Memorandum of Agreement (MOA). The MOA expanded the coordination and cooperation effort to include additional EPA Region 10 and Ecology programs, particularly the water quality programs (EPA and Ecology 2014 [12132]). The MOA acknowledged that both source control and the in-waterway cleanup are complex, and described a collaboration framework between agencies to coordinate the in-waterway cleanup and source control activities. The MOA details both state involvement in the EPA-led cleanup of the LDW and EPA's involvement with the state-led source control work.

1.3 Lower Duwamish Waterway Source Control Strategy

Ecology developed a Source Control Strategy (Strategy) for the LDW in 2004. The Strategy was revised in June 2016 (Ecology 2016b [11061]).

The Strategy is a framework for organizing the work of federal, state, and local source control agencies in the LDW as the Superfund project moves from the RI/FS phase into Remedial Design and construction activities for sediment cleanup. It identifies the goals and priorities of the LDW source control effort that will allow EPA to begin active sediment remediation, as described in the ROD. Implementation of these goals and priorities is largely influenced by the complex regulatory framework for controlling sources and pathways of contaminants within the 24 source control areas of the LDW basin (Figure 1-2). The Strategy clarifies the regulatory framework that Ecology and other source control partner agencies use to ensure regulatory controls are in place to minimize the potential for recontamination. The Strategy also describes the documentation, tracking, and reporting of the collective source control efforts and the external communication processes among the agencies.

Ecology, the City of Seattle, King County, the Port of Seattle, the City of Tukwila, the Puget Sound Clean Air Agency, the Washington State Department of Transportation (WSDOT), and EPA have been active participants in coordinating source control work in the LDW. Together, they are known as the LDW Source Control Work Group (SCWG). The focus of the SCWG is to share information, discuss strategy, develop action plans, implement source control measures, and track progress through coordinated monthly meetings.

Further information about LDW source control can be found at Ecology's LDW website.[9]

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[7] https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=1002020
[8] http://www.ldwg.org/project-library/
[9] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Lower-Duwamish-Waterway/Source-control

1.3.1 Source Control Implementation Plans

The Strategy calls for Ecology, King County, the City of Seattle, and EPA to develop Source Control Implementation Plans (SCIPs), which will be considered part of this Strategy (Ecology 2016b [11061]). The SCIPs describe how each agency will manage its programs to address source control.

The City of Seattle submitted its first SCIP to Ecology in May 2016 (Seattle 2016 [12271]). Seattle submitted their second LDW SCIP (SCIP 2) to Ecology in March 2020 (SPU 2020a [12418]). SCIP 2 describes the city's planned source control activities in the LDW for the five-year period from 2021 to 2026. In addition, SCIP 2 describes work conducted to identify and control sources in the LDW since the first SCIP was published in 2016. Seattle also submitted an annual summary of activities to Ecology in March 2020 as part of SPU's municipal separate storm sewer system (MS4) Phase 1 National Pollutant Discharge Elimination System (NPDES) annual report for 2019 (SPU 2020b [12419]). Relevant information has been incorporated into this LDW Source Control Status Report.

The first King County SCIP covered the period from 2014 through 2018 (King County 2016 [11543]). King County submitted their second SCIP to Ecology in October 2019 which summarizes King County's planned source control activities in the LDW for the five-year period from 2019 to 2023 (King County 2019 [12431]). In November 2020, King County submitted an annual report to Ecology describing source control activities conducted in 2019 (King County 2020b [12426]). The 2019 annual report describes King County's implementation of actions outlined in the SCIP for 2019 to 2023. Relevant information has been incorporated into this LDW Source Control Status Report.

1.4 Source Control Process

The source control process is described in detail in the Strategy (Ecology 2016b [11061]). Between February 2003 and September 2013, Ecology developed SCAPs for each of the 24 source control areas (sub-basins) that drain to the LDW Superfund site. The SCAPs identified potential contaminant sources and actions needed to fill data gaps, and assessed the presence of ongoing sources that could recontaminate sediments after cleanup. SCAPs are available on Ecology's website.[10]

Ecology grouped the 24 source control areas into three larger sub-areas: upper reach, middle reach, and lower reach (Figure 1-3). Ecology plans to use an upstream-to-downstream approach to source control so that EPA can most quickly begin active cleanup of LDW sediments. Ecology intends to focus on completing high priority action items in the source control areas that comprise each sub-basin. For example, Ecology plans to complete high priority actions first in the upper reach, then the middle reach, and finally the lower reach. More information about Ecology's plan for completing action items can be found in the Strategy (Ecology 2016b [11051]).

The 24 source control areas, by reach, are listed in Table 1-1.

[10] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Lower-Duwamish-Waterway/Source-control-area-map

Table 1-1. List of Source Control Areas, by Reach

Source Control Areas – East Side of LDW	Source Control Areas – West Side of LDW
Upper Reach	
RM 4.9 East (EAA-7: Norfolk CSO/SD)	RM 4.2-5.8 West (Restoration Areas)
RM 4.3-4.9 East (Boeing Developmental Center [BDC])	RM 3.8-4.2 West (Sea King Industrial Park)
RM 3.9-4.3 East (Slip 6)	RM 3.4-3.8 West (EAA-5: Terminal 117)
RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central King County International Airport)	
RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	
Middle Reach	
RM 2.8 East (EAA-3:Slip 4)	RM 2.2-3.4 West (Riverside Drive)
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)
RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	RM 2.1 West (1st Avenue South Storm Drain)
RM 1.7-2.0 East (Slip 2 to Slip 3)	RM 1.6-2.1 West (Terminal 115)
Lower Reach	
RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)	RM 1.3-1.6 West (Glacier Bay)
RM 1.0-1.2 East (King County Lease Parcels)	RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)
RM 0.9-1.0 East (Slip 1)	RM 0.0-1.0 West (Spokane Street to Kellogg Island)
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	
RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)	

CSO = combined sewer overflow KCIA = King County International Airport SD = storm drain

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

1.4.1 Source Control Goals

The Strategy describes two primary goals for source control: a near-term goal to allow the start of active in-waterway cleanup, and a long-term goal to minimize the risk of recontaminating sediments above the sediment cleanup standards established in the ROD (Ecology 2016b [11061]). This Source Control Status Report is focused on describing progress toward the first goal.

The principal sources of information used to evaluate the status of source control, and whether sufficient source control progress has been made to proceed with in-waterway cleanup, include the following (from Section 6.3.2 of the Strategy):

- Status of high and medium priority action items identified in the SCAPs;
- Information collected through business inspections and spill investigations/response;
- Relevant information collected through other studies;
- Status of permit compliance, where applicable; and
- Status of upland site cleanups.

Section 2 of this Source Control Status Report summarizes new information obtained during the current reporting period (January through December 2019) in the categories listed above.

Specific programs within Ecology, including the Water Quality (WQ) and Hazardous Waste & Toxics Reduction (HWTR) programs, maintain information about permit compliance status;

information on permit compliance status was generally not available during preparation of this Source Control Status Report.

As described in the Strategy, Ecology is responsible for evaluating and documenting source control sufficiency. Ecology plans to provide source control sufficiency evaluations and recommendations to EPA.

2.0 Basin-wide Source Control Activities

2.1 Action Item Status

The SCAP for each source control area included a list of action items needed to identify and control contaminant sources. These action items have been updated as new information was obtained, as documented in previous Source Control Status Reports. Routine functions, such as ongoing inspections and review of NPDES permits, were originally included as action items but have since been removed from the action item list. In some cases, multiple action items have been consolidated into a single action item or an action item has been split into its component parts to allow more efficient tracking. Some action items have been edited for brevity and clarity.

Follow-on action items have been added based on the outcomes of original action items published in the SCAPs. In addition, action items have been added as new information about a facility or source control area has become available. For example, if an inspection was conducted that led to additional investigation activities at a facility, these activities were added as a new action item. This Source Control Status Report identifies the action items for each source control area that were completed during the current reporting period and the action items for each source control area that have not yet been completed.

Table 2-1 lists the number of action items currently identified for each source control area. In addition, it identifies the number of completed and incomplete high priority action items for each source control area.

Table 2-1. Number of Action Items by Source Control Area

Source Control Area	Total No. of Action Items[a]	Percent of Action Items Completed[a]	No. of High Priority Action Items	Percent of High Priority Action Items Completed	No. of Incomplete High Priority Action Items
Upper Reach					
RM 4.9 East (EAA-7: Norfolk CSO/SD)	42	60%	3	33%	2
RM 4.3-4.9 East (BDC)	11	55%	2	100%	0
RM 3.9-4.3 East (Slip 6)	24	54%	16	50%	8
RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)	28	82%	8	88%	1
RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	36	69%	24	79%	5
RM 4.2-5.8 West (Restoration Areas)	9	33%	0	NA	0
RM 3.8-4.2 West (Sea King Industrial Park)	42	93%	4	100%	0
RM 3.4-3.8 West (EAA-5: Terminal 117)	32	94%	9	89%	1
Total – Upper Reach	224	73%	66	74%	17
Middle Reach					
RM 2.8 East (EAA-3: Slip 4)	62	89%	25	84%	4

Source Control Area	Total No. of Action Items[a]	Percent of Action Items Completed[a]	No. of High Priority Action Items	Percent of High Priority Action Items Completed	No. of Incomplete High Priority Action Items
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	44	70%	19	79%	4
RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	30	77%	12	83%	2
RM 1.7-2.0 East (Slip 2 to Slip 3)	43	72%	5	100%	0
RM 2.2-3.4 West (Riverside Drive)	17	53%	3	33%	2
RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	36	75%	8	88%	1
RM 2.1 West (1st Avenue S SD)	16	69%	1	0%	1
RM 1.6-2.1 West (Terminal 115)	26	42%	7	43%	4
Total – Middle Reach	274	72%	80	78%	18
Lower Reach					
RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)	13	77%	5	60%	2
RM 1.0-1.2 East (King County Lease Parcels)	41	71%	8	88%	1
RM 0.9-1.0 East (Slip 1)	18	61%	5	40%	3
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	51	90%	7	86%	1
RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)	13	62%	5	80%	1
RM 1.3-1.6 West (Glacier Bay)	30	73%	10	70%	3
RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)	9	44%	0	NA	0
RM 0.0-1.0 West (Spokane Street to Kellogg Island)	37	41%	0	NA	0
Total – Lower Reach	212	68%	40	73%	11
Total – All Reaches	710	71%	186	75%	46

[a] Includes action items that have been canceled because they were no longer needed (e.g., facility is no longer present, action is routine and ongoing, or is no longer relevant).
Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

A total of 507 out of 710 action items (71 percent) have been completed or canceled:

- 140 of 186 high priority action items (75 percent) have been resolved;
- 217 of 331 medium priority action items (66 percent) have been resolved;
- 150 of 193 low priority action items (78 percent) have been resolved.

A total of 46 high priority action items remain to be completed; of these, 17 action items are in the upper reach, 18 are in the middle reach, and 11 are in the lower reach.

Action items identified as complete or canceled (no longer needed) since publication of the last Source Control Status Report are listed in Appendix B, Table B-1[11]. Action items that have not been completed are shown in Appendix B, Table B-2.

2.2 Business Inspections and Spill Investigations

The City of Seattle operates the local sanitary/combined sewers that collect wastewater and stormwater and route it to the King County interceptor system, and it operates the municipal storm drains within its city limits. The City of Tukwila operates the municipal storm drains within its city limits. King County operates the large interceptor pipes that convey municipal and industrial wastewater, as well as stormwater, to the West Point treatment plant. King County operates its MS4 in unincorporated King County, and conducts inspections on county-owned and/or operated parcels within the incorporated municipal boundaries.[12] The sanitary/combined sewer and storm drains (including private storm drains) within the LDW drainage basin serve an area of about 19,800 acres and 8,940 acres, respectively.

SPU, King County, and Ecology all conduct business inspections in the LDW basin, as follows:

- SPU focuses its business inspections in areas that discharge to the LDW through the City MS4 system. Inspections in the combined sanitary/storm sewer system are conducted in response to requests and complaints, and as additional resources allow. SPU's business inspection program conducts stormwater inspections and refers hazardous waste or industrial waste issues to Ecology and King County, respectively. Seattle's storm drain basins are shown in Figure 2-1.
- King County provides technical support on industrial waste and small business hazardous waste issues as needed, and it inspects facilities permitted through the King County Industrial Waste (KCIW) program. King County inspects industrial users of the sanitary sewer system, including facilities within combined sewer systems in the LDW basin that discharge to the LDW during combined sewer overflow (CSO) events. LDW CSO basins are shown in Figure 2-2. Through its Water and Land Resources Division Stormwater Services program, King County also inspects businesses in unincorporated areas, and on county-owned or operated parcels that discharge to the LDW.
- Ecology conducts water quality inspections for NPDES-permitted facilities; these inspections focus on stormwater permit compliance issues. Ecology also conducts dangerous waste inspections at regulated businesses and facilities. Under the Local Source Control Partnership, Ecology provides technical assistance and grants to local jurisdictions to conduct technical assistance visits to smaller business generators of hazardous/dangerous wastes.

In addition, Ecology, SPU, and King County work together to conduct source control inspections under the Urban Waters Initiative. The Urban Waters Initiative, a component of the Puget Sound Initiative since 2007, is a comprehensive, multi-program approach to accomplish the following:

[11] More information is needed to update the status of action items that were competed or cancelled during 2019. This information will be incorporated into the Final Source Control Status Report.
[12] On King County leased parcels, the tenants are responsible for maintenance activity but the County performs inspections for compliance.

identify potential sources of contamination; ensure that facilities are both permitted (if applicable) and in compliance with permit conditions; increase inspections of regulated facilities; assist in the development of appropriate source control measures; provide assistance on toxics reduction and pollution prevention; and build capacity at the local level to safely manage and reduce toxics at small businesses and households.

The initiative is described in more detail in the May 2008 LDW Source Control Status Report (Ecology 2008a).

2.2.1 Seattle Public Utilities Inspections

During the current reporting period, SPU continued inspections of local businesses in the LDW area to ensure that they are implementing appropriate pollution prevention practices and complying with local stormwater pollution prevention compliance, and triage for referrals for hazardous waste management and industrial waste management. In 2019, SPU conducted 204 inspections at 147 facilities in the LDW (see Appendix C). The inspections resulted in 79 Corrective Action Letters. One of these sites was referred to Ecology for potential NPDES Industrial Stormwater permit coverage. Three facilities were issued notices of violation for non-compliance with the City's Stormwater Code. SPU also inspects the flow control and/or treatment facility. Within the LDW, SPU inspected 54 facilities for code compliance with regard to flow control and treatment system code requirements during 2019 (SPU 2020b [12419]).

Facilities inspected by SPU in the LDW basin during the current reporting are listed in Appendix C. This list includes screening visits, initial inspections, and follow-up inspections. A summary of the number of facilities inspected by SPU by source control area during 2019 is shown in Table 2-2.

Table 2-2. Summary of 2019 SPU Inspections by Source Control Area

Source Control Area	Sub-Basin	No. of Facilities Inspected 2019
Upper Reach		
RM 4.9 East (EAA-7: Norfolk CSO/SD)	Norfolk CSO/PS17/EOF/SD	14
RM 3.8-4.2 West (Sea King Industrial Park)	S 96th Street SD	1
Middle Reach		
RM 2.8 East (EAA-3: Slip 4)	I-5 SD at Slip 4, KCIA SD#3/PS 44 EOF, Georgetown SD	2
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Duwamish East Direct, S Garden Street SD, S Myrtle Street SD	6
RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	S Brighton Street SD, S River Street SD	4
RM 1.7-2.0 East (Slip 2 to Slip 3)	Duwamish East Direct	1
RM 2.2-3.4 West (Riverside Drive)	Duwamish West Direct, 7th Avenue S SD, 8th Avenue S CSO	9
RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Duwamish West Direct, Trotsky Inlet, 2nd Avenue S SD	5
RM 2.1 West (1st Avenue S SD)	1st Avenue S SD	6

Source Control Area	Sub-Basin	No. of Facilities Inspected 2019
RM 1.6-2.1 West (Terminal 115)	Duwamish West Direct, SW Kenny SD, Highland Park Way SW SD	5
Lower Reach		
RM 1.2-1.7 East (St. Gobain to Glacier Northwest)	Duwamish East Direct, Brandon CSO	2
RM 0.9-1.0 East (Slip 1)	Duwamish East Direct, Brandon CSO, Duwamish East CSO	2
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	Diagonal Avenue S SD, Diagonal CSO/SD, S Nevada Street SD	83
RM 1.3-1.6 West (Glacier Bay)	Duwamish West CSO	2
RM 0.0-1.0 West (Spokane Street to Kellogg Island)	SW Dakota Street SD, SW Idaho Street SD	5
	Total	**147**

Notes: Source control areas in which no inspections were performed during the reporting period are not included in this table. Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

SPU conducted source control actions in combined sewer basins located within Seattle in 2019 (this includes the LDW drainage area plus all other combined basins within the City of Seattle served by King County and City CSOs). These actions include response to spills and water quality complaints, and street sweeping. In 2019, SPU responded to 237 spill reports and 143 water quality complaints in the King County combined sewer basins. In 2019, SPU and Seattle Department of Transportation swept 10,016 lane miles in combined sewer basins (King County 2020b [12426]).

SPU inspectors respond to water quality complaints as they are received through the water quality hotline, the webpage, or through agency referrals. In 2019, 68 water quality complaints were reported in the LDW, which resulted in five business inspections.

Spills are dispatched through the SPU Operations Response Center to on-call Spill Coordinators. SPU responded to 84 spills within the LDW in 2019 (SPU 2020b [12419]).

Enhanced Business Inspection Program

SPU's SCIP described several planned enhancements to streamline SPU's business inspection program in the LDW. These efforts are described below (SPU 2020b [12419]).

- Shortened Business Compliance Period: The SPU source control team modified the business inspection process. The typical return-to-compliance process was taking on average 55 days. Instead of sending a "second and final" letter before issuing a notice of violation, now inspected businesses have 30 days to come into compliance after receiving the corrective action letter. If the corrections are not made, SPU issues a notice of violation.

  SPU also implemented a procedure for businesses that have been inspected multiple times. If the business does not maintain best management practices (BMPs) between inspection cycles, SPU can immediately issue a notice of violation. As this process was

refined and implemented by SPU source control inspection staff, the time for a business to return to compliance has decreased on average by 22 days. These changes have resulted in a reduction of process time which has allowed SPU to inspect more businesses (SPU 2020b [12419]).

- Revisions to Business Inspection Information Gathering Protocols: To improve efficiency with the inspection process, SPU decided to discontinue entering data for non-city stormwater code violations in 2017. SPU inspectors still act as a "triage" for other agencies such as KCIW and Ecology's HWTR and WQ programs. The SPU inspector refers issues or problem sites to another agency for follow up and will take part in that agency's enforcement activity to resolve the issue. These changes have helped to shorten SPU's inspection time onsite, without compromising the integrity of the inspection and still providing important compliance information to other partner agencies (SPU 2020b [12419]).
- Transition to Electronic Information Collection: SPU has used paper inspection forms and two Microsoft Access databases to track business inspections, stormwater facility inspections, water quality complaints, and spills since 2003. To become more efficient, SPU designed and built a replacement database and mobile solution. The new database went "live" on July 31, 2018. The SPU Source Control Team has been using the database since that time (SPU 2020b [12419]).

2.2.2 King County Inspections

King County Industrial Waste Inspections

The KCIW Program is a state and federal delegated pretreatment program with the authority to regulate the discharge of industrial wastewater to the King County regional wastewater system (King County 2015 [12182]). KCIW issues several types of discharge approvals, including waste discharge permits for significant industrial users (SIUs) and lower-level discharge authorizations for non-SIUs. Active industrial users in the LDW basin are listed in King County's Source Control Annual Report (King County 2020b [12426]).

In 2019, there were 19 facilities operating under waste discharge permits in the LDW basin; these facilities are inspected on an annual basis (King County 2020b [12426]). KCIW conducts periodic inspections of major non-SIUs, typically once within each five-year permitting cycle or when significant facility modifications occur. Facilities inspected by KCIW during 2019 are listed in Appendix D, Table D-1.

A KCIW inspector regularly attends meetings with inspectors from Ecology and SPU to coordinate and discuss source control issues at facilities in the LDW, and to identify issues of regulatory overlap. KCIW also responds to referrals related to illicit discharges and spills to the sanitary sewer (King County 2020b [12426]).

King County Stormwater Services Inspections

King County Stormwater Services created an inventory of parcels in the unincorporated portion of the LDW drainage area and ranked each parcel according to its potential to pollute and its history of stormwater inspection compliance. King County started conducting accelerated source control inspections in 2016. King County conducted 44 source control inspections at 29 facilities

in the LDW unincorporated area in 2019. Source control inspections conducted by King County are listed in Appendix D, Table D-2. These include facilities in the RM 3.8-4.2 West (Sea King Industrial Park) source control area, one facility in the RM 3.4-3.8 West (EAA-5: Terminal 117) source control area, and three facilities for which the location could not be determined from the information provided.

King County received one water quality complaint in the LDW area in 2019 regarding a food truck that was allegedly dumping their wastewater into a nearby catch basin. King County provided education to the employee, and the food truck agreed to haul the wastewater to their commissary. There were no further complaints regarding this food truck (King County 2020b [12426]).

Other King County Inspections

King County's Local Hazardous Waste Management Program team conducted 60 site visits in the LDW drainage area in 2019. Their efforts focus on technical assistance visits for hazardous material and waste management, including discharges to sanitary and storm drains (King County 2020b [12426]).

King County International Airport (KCIA) performed annual stormwater facility inspections in December 2019. Five KCIA tenants are also covered by the Industrial Stormwater General Permit (ISGP) and comply directly with Ecology requirements. In August 2019, KCIA performed their annual illicit discharge/connection inspections. King County did not identify any suspected or obvious illicit connections (King County 2020b [12426]).

King County's Facilities Management Division performs inspections at properties that are under King County custodial control. Annual facility maintenance inspections are performed on all Facilities Management Division managed properties with constructed stormwater facilities, such as catch basins or storage and treatment ponds.

Annual stormwater facility inspections in the LDW included three of the five parcels with buildings and King County tenants (the Orcas Building, Barclay Dean Building and the Elections Warehouse). The two parcels on which the Youth Services Center are located were not inspected by King County in 2019 because of inaccessibility resulting from ongoing construction activity.

In addition, four businesses on leased King County property fronting on the LDW were inspected in 2019 (Manson Construction, Lehigh-Cadman, J.A. Jacks, and Ardagh Glass Company), along with one tax title property that is undeveloped except for a driveway and stormwater feature. The inspections found that businesses were either in compliance or needed a catch basin cleaning, strip drain cleaning, or a minor repair to catch basin lid. All of the needed cleaning and repairs were performed (King County 2020b [12426]).

2.2.3 Ecology Inspections

Ecology Water Quality Inspections

Currently, 92 active NPDES permits are on record for areas within the 24 LDW source control areas.[13] These include two industrial individual permits, 82 facilities covered under the ISGP,

[13] The 92 active permits do not include construction stormwater permits.

five facilities covered under the sand and gravel general permit, one facility covered under the vessel deconstruction general permit, and two facilities covered under the boatyard general permit. While the permits limit and control the discharge of a number of water quality pollutants, they do not necessarily control contaminants that pose a threat to sediments, such as PCBs, PAHs, arsenic, and mercury.

Ecology is continuing to inspect NPDES-permitted facilities to ensure compliance with permit conditions. In addition, Ecology WQ inspections continue to identify facilities in the LDW that may need to apply for NPDES permits. Ecology will follow up with these facilities to ensure they submit an application for a stormwater permit or a Conditional No Exposure Certificate, as appropriate.

During the current reporting period (2019), Ecology WQ conducted 48 inspections at 40 facilities. Ecology WQ inspections are listed in Appendix E, Table E-1. Additional WQ updates are listed in Appendix E, Table E-4.

Ecology HWTR Inspections

Ecology's HWTR Program conducts hazardous waste inspections at facilities within the LDW basin[14]; these are listed in Appendix E, Table E-3.

Urban Waters Initiative Inspections

During the current reporting period, Ecology's WQ and HWTR inspectors and Toxics Cleanup Program (TCP) staff continued to coordinate facility inspections and priorities with SPU and King County inspectors to avoid overlap in the field. [15]

Table 2-3 summarizes Ecology inspections conducted in 2019.

Table 2-3. Summary of 2019 Ecology Inspections by Source Control Area

Source Control Area	No. of Facilities Inspected in 2019		
	WQ Program	HWTR Program[16]	Urban Waters Initiative[17]
Upper Reach			
RM 4.9 East (EAA-7: Norfolk CSO/SD)	2		
RM 4.3-4.9 East (Boeing Developmental Center)	1		
RM 3.9-4.3 East (Slip 6)	1		
RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)	1		
RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	1		
RM 3.8-4.2 West (Sea King Industrial Park)	7		
Middle Reach			
RM 2.8 East (EAA-3: Slip 4)	1		

[14] Information is needed about HWTR inspections conducted in the LDW in 2019.
[15] Information is needed about Urban Waters Initiative inspections conducted in the LDW in 2019.
[16] Information is needed about HWTR inspections conducted in the LDW in 2019.
[17] Information is needed about Urban Waters Initiative inspections conducted in the LDW in 2019.

Source Control Area	No. of Facilities Inspected in 2019		
	WQ Program	HWTR Program[16]	Urban Waters Initiative[17]
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	2		
RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	3		
RM 1.7-2.0 East (Slip 2 to Slip 3)	3		
RM 2.2-3.4 West (Riverside Drive)	5		
RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	1		
RM 2.1 West (1st Avenue S SD)	4		
RM 1.6-2.1 West (Terminal 115)	1		
Lower Reach			
RM 1.2-1.7 East (St. Gobain to Glacier Northwest)	2		
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	3		
RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)	1		
RM 0.0-1.0 West (Spokane Street to Kellogg Island)	1		
Total	**40**		

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

2.3 Source Tracing and Sampling

Source tracing activities include identification and assessment of potential sources of contaminants to the LDW through the storm drain/combined sewer systems. Source tracing is designed to identify sources by strategically collecting samples at key locations within the LDW drainage basin. A variety of sampling techniques are used because no single sampling method exists to effectively trace sources of contaminants to LDW sediments.

In this report, storm drain solids and combined sewer solids data are compared to the Washington State Sediment Management Standards (SMS) to provide a rough indication of overall quality. The SMS include the benthic Sediment Cleanup Objectives (SCOs), which identify surface sediments that have no adverse effects on biological resources, and Cleanup Screening Levels (CSLs), which are used as an upper regulatory threshold for making decisions about source control and cleanup. For most organic compounds, the SCO and CSL are presented in the SMS as organic carbon (OC) normalized concentrations. For simplicity, in this report all concentrations are presented as DW concentrations; storm drain and combined sewer solids data for organics are compared to the Lowest Apparent Effects Threshold (LAET) or Second Lowest Apparent Effects Threshold (2LAET) values, which are functionally equivalent to the SCO and CSL, respectively (Ecology 2019bf).

To determine whether source tracing should be initiated, SPU and King County compare storm drain solids data to the CSL/2LAET values.[18] King County compares combined sewer solids data to twice the 2LAET values.

[18] Once storm drain solids are found to be below the CSL/2LAET, King County uses the SCO/LAET as well as other lines of evidence to determine the need for source tracing (King County 2016a).

For petroleum hydrocarbons, Model Toxics Control Act (MTCA) Method A soil cleanup levels are used for comparison to storm drain solids concentrations. Concentrations of cPAHs are compared to the LDW-wide RAL of 1 milligram per kilogram (mg/kg) toxicity equivalents (TEQ). Dioxin/furan concentrations are compared to the LDW-wide RAL of 25 nanograms per kilogram (ng/kg) TEQ.

In this Source Control Status Report, the values described above that are used for comparison to storm drain and combined sewer solids data are referred to as "storm drain screening levels." It should be emphasized that none of these screening level values are applied as cleanup levels to storm drain or combined sewer solids. It is important to note that any comparison of this kind is most likely conservative given that sediments discharged from storm drains are highly dispersed in the receiving environment and mixed with the natural sedimentation taking place in the system. The storm drain screening levels are listed in Table 2-4.

Table 2-4. Storm Drain Screening Levels
(All concentrations expressed as mg/kg DW)

Chemical Class	Chemical Parameter	SCO	CSL	MTCA Method A	LDW RAL
PCBs	Total Aroclors	0.13	1.0		
Dioxins/Furans	Dioxin/furan TEQ (NDx0.5)[a]				0.000025
Metals	Arsenic	57	93		
	Cadmium	5.1	6.7		
	Chromium	260	270		
	Copper	390	390		
	Lead	450	530		
	Mercury	0.41	0.59		
	Silver	6.1	6.1		
	Zinc	410	960		
HPAHs	Benzo(a)anthracene[b,c]	1.3	1.6		
	Benzo(a)pyrene[b,c]	1.6	1.6		
	Benzo(g,h,i)perylene[b]	0.67	0.72		
	Chrysene[b,c]	1.4	2.8		
	Dibenz(a,h)anthracene[b,c]	0.23	0.23		
	Fluoranthene[b]	1.7	2.5		
	Indeno(1,2,3-cd)pyrene[b,c]	0.60	0.69		
	Pyrene[b]	2.6	3.3		
	Total benzofluoranthenes[b,c]	3.2	3.6		
	Total cPAH TEQ (NDx0.5)				1.0
	Total HPAH	12	17		
LPAHs	2-Methylnaphthalene	0.67	0.67		
	Acenaphthene[d]	0.50	0.50		
	Acenaphthylene[d]	1.3	1.3		
	Anthracene[d]	0.96	0.96		
	Fluorene[d]	0.54	0.54		
	Naphthalene[d]	2.1	2.1		
	Phenanthrene[d]	1.5	1.5		
	Total LPAH	5.2	5.2		
Phthalates	Bis(2-ethylhexyl)phthalate	1.3	1.9		

Chemical Class	Chemical Parameter	SCO	CSL	MTCA Method A	LDW RAL
	Butylbenzyl phthalate	0.063	0.90		
	Diethyl phthalate	0.20	>1.2		
	Dimethyl phthalate	0.071	0.16		
	Di-n-butyl phthalate	1.4	1.4		
	Di-n-octyl phthalate	6.2	6.2		
Phenols	2,4-Dimethylphenol	0.029	0.029		
	2-Methylphenol	0.063	0.063		
	4-Methylphenol	0.67	0.67		
	Pentachlorophenol	0.36	0.69		
	Phenol	0.42	1.2		
Other SVOCs	1,2,4-Trichlorobenzene	0.031	0.051		
	1,2-Dichlorobenzene	0.035	0.050		
	1,4-Dichlorobenzene	0.11	0.11		
	Benzoic acid	0.65	0.65		
	Benzyl alcohol	0.057	0.073		
	Dibenzofuran	0.54	0.54		
	Hexachlorobenzene	0.022	0.070		
	Hexachlorobutadiene	0.011	0.12		
	n-Nitrosodiphenylamine	0.028	0.040		
Petroleum Hydrocarbons	Gasoline-range hydrocarbons			30	
	Diesel-range hydrocarbons			2,000	
	Oil-range hydrocarbons			2,000	

HPAH = high molecular weight PAH LPAH = low molecular weight PAH ND = non-detect

Notes:
[a] The LDW RAL for dioxins/furans is also expressed as 25 ng/kg TEQ.
[b] Included in calculation of total HPAH.
[c] Included in calculation of total cPAH TEQ.
[d] Included in calculation of total LPAH.

Source tracing locations where samples were collected during the current reporting period (2019) are shown on Figure 2-3. Results are discussed below and as relevant in subsequent sections for the specific source control areas in which they are located.

2.3.1 SPU Source Tracing Activities

SPU collects grab samples from private onsite catch basins and catch basins located in the public right-of-way, grab samples from in-line maintenance holes in the conveyance system, and in-line sediment trap samples. SPU received funding from Ecology to develop new source tracing tools. Projects include the use of dogs to detect PCBs, and the development of an improved sediment trap.

Detection Dog Pilot Test

SPU received another Stormwater Financial Assistance Grant from Ecology to continue their work with the University of Washington Conservation Canines program (UWCC) to develop the detection dog program. This program is designed to determine whether a specially trained dog can detect PCBs in the urban environment. This work is funded through 2021.

The next phase of the project involves developing protocols for incorporating detection dog services into SPU's source tracing efforts. In 2019, SPU developed a Memorandum of

Agreement with the UWCC and completed the Work Plan for the project. In 2019 the UWCC Program obtained and started training a new dog. SPU plans to train an additional detection dog and develop protocols for incorporating detection dog services into SPU's source tracing efforts.

The PCB detection dog helps SPU in permit required activities such as source control. The detection dog can screen an area for PCBs in an afternoon and help pinpoint potential sources of PCBs so that SPU inspectors can work with private parties to implement BMPs to prevent the PCBs from continuing to enter the environment (SPU 2020b [12419]).

Sediment Trap Pilot Test

SPU has been testing a new sediment trap design to support source tracing efforts. The new sediment trap is designed to collect storm drain solids more effectively. This work was supported by a grant from Ecology that ended in 2018. In 2018, SPU continued field testing field prototype designs at two locations in the LDW (S Myrtle Street and Diagonal Ave S storm drain systems). SPU submitted the final data report with the field testing results to Ecology in 2019. SPU retrieved the traps in 2019 and re-installed them for one final year (SPU 2020b [12419]).

Illicit Discharge Detection and Elimination

SPU conducts illicit discharge detection and elimination sampling of onsite catch basins, right of way catch basins and drainage system mainlines to identify sources of contamination and potential illicit discharges and illicit connections. Sampling is conducted with business inspections to identify and eliminate sources of pollution (SPU 2020b [12419]).

Collection of Source Tracing Samples

Table 2-5 lists outfalls owned by Seattle, or owned or installed by others to which the Seattle MS4 discharges. Outfalls are shown in Appendix A. As part of the effectiveness monitoring program required under Seattle's MS4 permit, SPU is on track to install or collect one sample per calendar year from each outfall and near-end-of-pipe monitoring location listed below (SPU 2020b [12419]):

Table 2-5. City of Seattle Outfalls in the LDW Basin

Outfall Name	Outfall Ownership	Separated Stormwater Drainage Basin Area (acres)	Outfall Diameter (inches)	Effectiveness Monitoring Location
East Side of LDW				
S Nevada Street	Seattle	26	18	No
Diagonal Avenue S (a)	Seattle	2,666	144	Yes
1st Avenue S (East)	Seattle	15	36	Yes
S River Street	Seattle	7.6	8	Yes
S Brighton Street	Seattle	19	30	Yes
S Myrtle Street	Seattle	8.6	30	Yes
North Boeing Field	Seattle	(b)	24	No
Georgetown	Seattle	4.5	24	Yes
Head of Slip 2	Private	12	24	Yes
S Garden Street (c)	Private	12	30	Yes

Outfall Name	Outfall Ownership	Separated Stormwater Drainage Basin Area (acres)	Outfall Diameter (inches)	Effectiveness Monitoring Location
I5 SD at Slip 4	WSDOT	150 (d)	72	Yes
16th Avenue S (East)	Tukwila	12	12	No
KCIA SD#1	King County	192 (e)	30	No
S Norfolk Street (f)	Tukwila	676 (g)	84	Yes
I5 SD at S Ryan Street (h)	WSDOT	617 (i)	60	No
West Side of LDW				
SW Dakota Street	Seattle	54 (j)	30	Yes
SW Idaho Street	Seattle	423	72	Yes
SW Kenny Street (k)	Seattle	154	48	Yes
Highland Park Way SW	Seattle	296 (l)	72	Yes
S Webster Street	Seattle	(m)	6	No
7th Avenue S	Seattle	238	72	Yes
17th Avenue S	Seattle	2.9	18	Yes
Duwamish substation SD#1	Seattle	0.6	8	No
Duwamish substation SD#2	Seattle	1	8	No
Duwamish substation SD#3	Seattle	1.9	8	No
1st Avenue S (West)	WSDOT	606	open channel	Yes
2nd Avenue S	Private	38 (n)	24	No
S 96th Street	Unknown	1,050 (o)	72	No
West Marginal Place SW	Unknown	4.9 (p)	36	No

(a) SPU's CSO #111 and King County's Hanford #1 CSO also discharge to this outfall.
(b) Based on recent video inspection findings, there are no longer active connections to this system.
(c) Outfall ownership transferred to Seattle Iron and Metals Company in 2012.
(d) Approximately 65 acres are served by Seattle-owned storm drains. The remainder is I-5 and railroad right-of-way drainage.
(e) Approximately 114 acres are served by Seattle-owned storm drains. The remainder is I-5 right-of-way and King County Airport property.
(f) King County's S Norfolk CSO and treated discharge from the Henderson/MLK Wet Weather Treatment Station discharge to this outfall.
(g) Approximately 431 acres are served by Seattle-owned storm drains. The remainder is in the City of Tukwila.
(h) Seattle installed a high flow bypass to the S Ryan Street system in 1992 to divert excess stormwater flow from the S Norfolk Street CSO/PS 17 EOF/SD drainage system to prevent flooding during large storm events.
(i) Approximately 407 acres are served by Seattle-owned storm drains. The remainder is in the City of Tukwila.
(j) 47 acres drains to the Seattle-owned SW Dakota Street SD system. An additional 9 acres drains to the constructed channel that discharges to the LDW downstream (east) of Seattle's outfall.
(k) King County's T115 CSO discharges to this outfall (100 acres).
(l) Does not include the approximately 7.3 acre overlap within the 1st Avenue S drainage basin.
(m) A single catch basin in S Riverside Drive is connected to this outfall.
(n) Approximately 18.4 acres are served by Seattle-owned storm drains. The remainder is privately-owned.
(o) Approximately 99 acres are served by Seattle-owned storm drains. The remainder is unincorporated King County.
(p) Seattle-owned drainage only.

In 2019, SPU collected 85 samples of storm drain solids from the City's MS4; sample results are provided in Appendix F. Sample results are summarized below:

- Arsenic concentrations ranged from <6.0 mg/kg DW to 450 mg/kg DW. One sample in the Diagonal Avenue CSO/SD (ST2) exceeded the CSL (93 mg/kg DW) for arsenic during 2019.
- Total PCB concentrations in storm drain samples ranged from <0.0083 mg/kg DW to 7,000 mg/kg DW. Ten samples exceeded the CSL for PCBs (1.0 mg/kg DW); these were located in the S Garden Street SD, the 1st Avenue S SD, and the Diagonal Avenue S CSO/SD. The highest concentrations were detected at RCB91 located at a Seattle City Light loading dock (Diagonal Avenue S CSO/SD). In addition, five samples of dirt or building caulk exceeded the CSL for PCBs.
- Total cPAH TEQ concentrations ranged from <0.0049 mg/kg DW to 41 mg/kg DW; nine samples exceeded the LDW RAL (1.0 mg/kg DW). Exceedances were observed in the 1st Avenue S SD, 7th Avenue S SD, S River Street SD, S Nevada Street SD, and the Diagonal Avenue S CSO/SD.
- No samples were analyzed for dioxins/furans. Other chemicals with CSL exceedances in SPU storm drain solids samples include copper, lead, mercury, zinc, various PAH compounds, phthalates, 1,2,4-trichlorobenzene, 2-methylphenol,4-methylphenol, benzoic acid, benzyl alcohol, dibenzofuran, hexachlorobenzene, hexachlorobutadiene, n-nitrosodiphenylamine, pentachlorophenol, and phenol. Diesel-range and oil-range hydrocarbons exceeded the storm drain screening levels.

SPU plans to conduct the following sampling in 2020 (SPU 2020b [12419]):

- Source tracing priorities for 2020 will largely remain the same as described in the Source Control Implementation Plan. Changes based on recent sampling and business inspections are focused on filling data gaps. Remaining data gaps are largely located in smaller areas within the MS4 that discharge to other larger drainage systems (16th Avenue S SD (west), the W Marginal Place SD) or areas that have been difficult to sample due to lack of solids in the system (I-5 SD at S Ryan Way).

2.3.2 King County Source Tracing Activities

King County's Sediment Management Program has been collecting solids samples from pipes, wet wells, and outfall weir structures in the combined sewer system since 2010. During 2019, King County sampled the T-115 CSO and Hanford #1 CSO basins. Sediment trap samples were collected in May 2019 following an approximately 10-month deployment period; results are provided in Appendix G (King County 2020b [12426]).

King County’s T-115 CSO sediment trap sample was collected from a maintenance hold just north of the West Marginal Pump Station to represent potential discharges from the West Duwamish Interceptor at T-115 CSO. Concentrations of mercury, BEHP, benzoic acid, and pentachlorophenol were above the CSL (2LAET) at this location.

King County collected sediment trap samples at two locations within the Hanford #1 CSO basin. The two locations sampled were: the area of S Hanford Street and MLK Jr. Way S, and the area of Rainier Avenue S and S Estelle Street. At the sampling location near S Hanford Street and MLK Jr. Way S, mercury, BEHP, and benzoic acid exceeded the CSL at both locations; in addition, 1,4-dichlorobenzene, 2-methylphenol, pentachlorophenol, and phenol exceeded the CSL at the S Hanford Street location (see Appendix G).

In 2020, King County source tracing activities will be focused on West Michigan CSO basin. Other actions will include source investigations in the Michigan CSO basin to evaluate potential sources of mercury in the system close to the regulator station (King County 2020b [12426]).

King County's Stormwater Services Section collected a sediment trap sample from location 96-ST1 in March 2019 following an approximately 1-year deployment period. This location is associated with the South 96th Street stormwater drainage basin that flows into the North Fork Hamm Creek and eventually into the LDW. King County also collected one solids sample from a catch basin associated with the South Park Bridge (location LDW-SG3) in March 2019. Analytical results for the sediment trap samples analyzed by King County in 2019 are provided in Appendix G.

In 2020, King County plans to conduct sediment trap sampling at three locations (96-ST1, 96-ST2, and 96-ST3). The priority analytes will be zinc and HPAHs, based on previous data. King County's SCIP summarizes the locations targeted for sediment trap sample collection (King County 2019 [12431]).

King County collected four sediment trap samples and six grab samples representing storm drain solids from locations at KCIA that drain to Slip 4, Former Slip 5, and Slip 6 during 2019. Annual sediment trap and grab sampling will continue in 2020 (King County 2020b [12426]). Analytical results are presented in Appendix G.

2.4 Other Source Control Activities

2.4.1 Storm Drain Line Cleaning

In 2019, SPU cleaned approximately 20,745 linear feet of pipe in the Diagonal Avenue S CSO/SD sections on 6th Ave South and South Dakota Street (SPU 2020b [12419]). These locations were identified as priority basins in the City's 2015 SCIP. This work is conducted to remove solids that have accumulated in the MS4 in order to prevent them from discharging into the LDW and to facilitate source tracing efforts.

SPU will also conduct annual inspection and maintenance at Seattle-owned stormwater facilities. SPU will continue to clean a minimum of 4,000 linear feet of storm drain lines each year. Line cleaning in 2020 will focus on S Norfolk Street SD, 1st Ave S SD (west), Diagonal Avenue S SD (Denver Avenue S subbasin), and Diagonal Avenue S SD (S Snoqualmie Street subbasin).

SPU will work to establish consistent preventative maintenance frequencies as part of the refinements to planning and scheduling associated with the line cleaning program in the LDW. SPU will hold an annual meeting between the Source Control Team and the Drainage and Wastewater Maintenance team to coordinate line cleaning efforts between contracted crews and SPU (SPU 2020b [12419]).

SPU will report on progress and accomplishments toward completion of the South Park Conveyance Project in the 2021 Annual Report. SPU will continue the development and refinement of preventative maintenance and job plans for city owned stormwater infrastructure and report on status in the 2021 Annual Report (SPU 2020b [12419]).

KCIA is performing storm drain line cleaning in accordance with the ISGP. The 2015 ISGP requires stormwater line cleaning for permitted sites that discharge to the LDW. KCIA performs storm drain line cleaning in conjunction with their current catch basin cleaning schedule. KCIA

East and Central Areas were cleaned in 2015 and 2016, respectively, per the ISGP. KCIA completed storm drain line cleaning in the KCIA West Areas in 2017 (taxiways, parking lots, maintenance shop, airparks, and outfalls). Stormwater line cleaning is expected to start in 2021 (King County 2020b [12426]).

2.4.2 Stormwater Treatment

SPU is planning to construct a South Park Water Quality Facility to treat stormwater runoff from the 7th Avenue S SD. In 2019, In 2019 SPU started searching for alternate locations for the water quality facility. SPU also started to consider additional treatment options, including bioretention, which would require more space for construction than the mechanical treatment systems that had previously been considered (SPU 2020b [12419]).

SPU completed a drainage system that was constructed as part of the Adjacent Streets and Stormwater Infrastructure project for the Terminal 117 EAA in 2017. SPU retrieved the end-of-pipe trap installed in the 17th Avenue S storm drain in June 2018, but there was insufficient material for analysis. SPU retrieved the trap in May 2019 and was able to obtain enough material for analysis of PCBs. The trap sample contained PCB concentration of 685 µg/kg DW (SPU 2020b [12419]).

2.4.3 CSO Control Projects

Three King County CSO control projects are currently underway in the LDW. The projects are the West Duwamish Wet Weather Storage Project (West Michigan and Terminal 115 CSOs), Georgetown Wet Weather Treatment Station (Brandon and Michigan CSOs), and Rainier Valley Wet Weather Storage Project and conveyance improvements (Hanford #1 CSO).

The objective of these projects is to control the remaining uncontrolled King County CSOs in the LDW to the state standard of no more than one untreated CSO discharge on average per year at each outfall, and will remove most of the untreated CSOs in the LDW.

The West Duwamish project was in the pre-design phase during this reporting period. King County plans to submit the facility plan by December 2020. This project is expected to be in operation by 2030. The Georgetown Wet Weather Treatment Station was in the construction phase in 2019. The construction is expected to be completed by December 2022.

King County submitted their 2019 CSO Control Program Consent Decree Annual Report to Ecology in July 2020. This report includes the county's CSO control project and compliance activities from January through December 2019 (King County 2020a [12435]).

2.4.4 King County Mapping Updates

King County is required to map and document the MS4 on properties it owns or operates as part of their NPDES Phase 1 Municipal Stormwater Permit. In 2016 King County completed the mapping effort for unincorporated areas that drain to the LDW. King County created a stormwater asset inventory and initiated a project to resolve connectivity issues. In 2018 and 2019 King County resolved 24 connectivity issues through closed-circuit television inspections and construction projects. There are five connectivity issues that remain unresolved. King County plans to continue to improve the stormwater asset inventory datasets in the LDW drainage area in unincorporated King County (King County 2020b [12426]).

2.4.5 King County Waterworks Grant Funding

King County established the WaterWorks Grant Program to promote source control partnerships, to develop local expertise in water quality protection, and to enhance economic opportunities in the community. This program funds projects carried out by organizations and agencies that help to control new and ongoing sources of pollution and to reduce the volume and timing of CSOs. In 2019 King County awarded WaterWorks grant funding to 14 projects (totaling $1,362,268) that take place in the LDW source control area (King County 2020b [12426]).

2.5 Site Assessment and Cleanup

During SCAP development, Ecology and its contractors identified contaminated properties that have the potential to cause sediment contamination. This included the review of available information about each property and assessment of whether the site poses a threat to LDW sediments. The detailed information on each property is documented in either a Property Review Report (Duwamish/Diagonal Way, Terminal 117, and Slip 4 source control areas) or in a Data Gaps Report (all other source control areas). Property reviews and/or data gaps reports have been completed for all 24 source control areas. Site characterization or cleanup is in progress at several facilities that are known or suspected threats to LDW sediments.

EPA is managing sites under the Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and/or the Toxic Substances Control Act (TSCA). These are listed in Table 2-6. Ecology is managing the cleanup sites listed in Table 2-7.

The current status of cleanup at each of these sites is shown in Table 2-8. The total number of sites that will require characterization and/or cleanup in the LDW basin is unknown at this time.

Table 2-6. Cleanup Sites Under EPA Oversight

Source Control Area	Facility Name	Regulatory Authority
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	Rainier Commons	TSCA
RM 2.8 East (EAA-3: Slip 4)	Slip 4 EAA cleanup, including Georgetown Flume outfall replacement (completed in 2009)	CERCLA
RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Boeing Former Electronics Manufacturing Facility (EMF)	CERCLA
	Boeing Plant 2	RCRA
	Jorgensen Forge, Outfall Site (Time Critical Removal Action) (Completed in 2018)	CERCLA
	Jorgensen Forge, Sediment Site	CERCLA
RM 3.9-4.3 East (Slip 6)	Rhone-Poulenc	RCRA
RM 3.4-3.8 West (EAA-5: Terminal 117)	Terminal 117	CERCLA

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

Table 2-7. Cleanup Sites Under Ecology Oversight

Source Control Area	Facility Name	Regulatory Authority
Upper Reach		
RM 4.9 East (EAA-7: Norfolk CSO/SD)	Emerald Gateway	MTCA Agreed Order (Jan 2020)
	Boeing Field Chevron	MTCA Agreed Order (Jul 2015)
RM 4.3 – 4.9 East (Boeing Developmental Center)	Boeing Developmental Center	MTCA Agreed Order (July 2019)
RM 3.9-4.3 East (Slip 6)	8801 Site	MTCA Agreed Order (Jul 2006) MTCA Agreed Order (Nov 2008, amended Aug 2017)
RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)	Boeing Isaacson Thompson	MTCA Agreed Order (Apr 2010)
RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Jorgensen Forge, upland of the EPA-managed area	MTCA Agreed Order (Jul 2007, amended Jul 2013), Enforcement Order (Mar 2015), MTCA Agreed Order (Jul 2017)
RM 3.4-3.8 West (EAA-5: Terminal 117)	South Park Marina	MTCA Agreed Order (April 2019)
Middle Reach		
RM 2.8 East (EAA-3: Slip 4)	Crowley Marine Services 8th Avenue S	MTCA Agreed Order (Oct 2009)
	North Boeing Field/ Georgetown Steam Plant	MTCA Agreed Order (Aug 2008)
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Fox Avenue Building	MTCA Agreed Orders (May 2009, Jun 2012, amended Jun 2013)
	Whitehead Tyee Site	MTCA Agreed Order (Aug 2016)
RM 1.7-2.0 East (Slip 2 to Slip 3)	Duwamish Marine Center	MTCA Agreed Order (Sep 2011)
RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Douglas Management Dock	MTCA Agreed Order (May 2011)
	Industrial Container Services/ Trotsky Property	MTCA Agreed Order (May 2010)
RM 2.1 West (1st Avenue S Storm Drain)	South Park Landfill	MTCA Agreed Order (May 2009, amended Jun 2013 and Feb 2016), Consent Decree (March 2019)
RM 1.6-2.1 West (Terminal 115)	North Terminal 115	MTCA Agreed Order (Mar 2011)
Lower Reach		
RM 0.9-1.0 East (Slip 1)	Snopac Property	MTCA Agreed Order (July 2019)
RM 1.3-1.6 West (Glacier Bay)	Duwamish Shipyard	MTCA Agreed Order (Sep 2010)
	Glacier Northwest/Reichhold Chemical	MTCA Agreed Order (May 2009)
Combined sewer area	Burlington Environmental/ East of 4th Site	RCRA Agreed Order (May 2010)
	West of 4th Site	RCRA Agreed Order (Apr 2014), Amended (Nov 2017)
	General Electric-Dawson Street Plant	RCRA Agreed Order (May 2007)

Table 2-8. Ecology Cleanup Site Status

Site Name	Agreed Order	Remedial Investigation	Feasibility Study	Cleanup Action Plan	Cleanup	Interim Action
Upper Reach						
8801 Site	2006, 2008	2011	In progress	In progress		In progress
Boeing Field Chevron	2015	In progress	In progress			
Boeing Isaacson/Thompson	2010	2014	In progress			
Emerald Gateway	2020					
Jorgensen Forge	2007, 2015, 2017	In progress				2014
South Park Marina	2019					
Boeing Developmental Center	2019	In progress	In progress			
Middle Reach						
Crowley Marine Services 8th Avenue S	2009	In progress	In progress			
Douglas Management	2011	In progress	In progress			
Duwamish Marine Center	2011	In progress	In progress			
Fox Avenue Building	1991, 2009, 2012, amended 2013	2011	2012	Agreed Order 2012, amended 2013	In progress	2009
Industrial Container Services	2011	In progress	In progress			
North Boeing Field/ Georgetown Steam Plant	2008	In progress				2011
North Terminal 115	2011	In progress				
South Park Landfill	2009	2017	2017	2018		2014, 2016
Whitehead Tyee	2016	In progress				2017
Lower Reach						
Duwamish Shipyard	2010	May 2019	In progress			
Glacier Northwest/ Reichhold	2009	In progress	In progress			
Snopac Property	2019	In progress	In progress	In progress		2019

Table Notes: The following MTCA Cleanup Sites are not included in the schedule above; these are located in the LDW basin but are in the combined sewer area and not within the boundaries of a source control area: GE-Dawson Street Plant, East of 4th Site (Capital Industries, Art Brass Plating, Blaser Die Casting), and West of 4th Site (Burlington Environmental). The following EPA-lead sites are not included in the schedule above: Boeing Plant 2, Terminal 108, Terminal 117, Rhone-Poulenc, Rainier Commons, and Boeing Former EMF.

Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

2.6 Additional Studies Relevant to Source Control

2.6.1 Green-Duwamish Pollutant Loading Assessment (Ecology/EPA)

Ecology and EPA initiated a Pollutant Loading Assessment (PLA) for the Green-Duwamish River watershed in 2014. The purpose of the PLA is to identify upstream pollution sources to the LDW and to identify strategies to reduce those sources of pollution to the entire Green-Duwamish River watershed. To accomplish these goals, the PLA is developing watershed-based models to evaluate the cumulative effects of toxic pollution, assess the relative contribution of toxic pollution from source pathways in the watershed, and help prioritize efforts to control the release of pollutants in the watershed. The PLA models and future monitoring data will support source control decisions for the Green-Duwamish River watershed.

The PLA is being developed with the participation of a Technical Advisory Committee (TAC). The TAC is made up of technical staff from public agencies, quasi-governmental groups, and community. The Interested Parties Group also provides input and is composed of agencies, businesses, nonprofit groups, and the general public. EPA's contract with TetraTech to develop the watershed model expired in 2018. Ecology, in coordination with modelers from King County and technical staff from the City of Seattle, started to lead the modeling effort in 2018. The PLA TAC met in June 2018 to discuss the watershed model modification and sediment calibration, and receiving water modeling approach. The PLA is a long-term project which will be phased over many years. Additional information related to this project is posted on Ecology's PLA website[19].

2.7 Source Control Area-Specific Activities

Ecology conducted source control investigations for each of the 24 source control areas, including review of existing information, identification of data gaps, and preparation of a SCAP. The 24 source control areas are shown in Figure 1-2. The potential for sediment recontamination associated with each source control area is described in detail in the Data Gaps Reports and SCAPs. These documents are available on Ecology's LDW Source Control website.[20]

Source control status reports describe source control activities that have been conducted since 2003, as follows:

- Report 1 – 2003 to June 2007 (Ecology 2007 [00021])
- Report 2 – July 2007 to March 2008 (Ecology 2008a [00065]),
- Report 3 – April to August 2008 (Ecology 2008d [00068]),
- Report 4 – September 2008 to June 2009 (Ecology 2009c [00090]),
- Report 5 – July 2009 to September 2010 (Ecology 2011c [00095]),
- Report 6 – October 2010 through December 2011 (Ecology 2012b [00098]),
- Report 7 – January through December 2012 (Ecology 2013 [10359]),
- Report 8 – January through December 2013 (Ecology 2014 [10620]),

[19] https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Total-Maximum-Daily-Load-process/Directory-of-improvement-projects/Green-Duwamish-Watershed-PLA
[20] https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Lower-Duwamish-Waterway

- Report 9 – January 2014 through December 2016 (Ecology 2018b [12005]),
- Report 10 – January through December 2017 (Ecology 2019ac [12262]), and
- Report 11 – January through December 2018 (Ecology 2020 [12420]).

This current Source Control Status Report (Report 12) describes source control actions that were conducted from January through December 2019.

Appendix B, Table B-1[21], will list action items that were completed during this reporting period. Table B-2 lists action items that have not yet been completed, including new source control action items that have been added since initial publication of the SCAPs. Source control activities conducted from January through December 2019 are described in Sections 3 through 5:

- Section 3: Upper Reach
- Section 4: Middle Reach
- Section 5: Lower Reach

Properties for which no source control activities were conducted during the reporting period are not discussed in this report. Site maps are presented for each of the 24 source control areas in Appendix A. These maps are intended to help identify locations discussed in the text. Additional figures are available in the referenced reports.

[21] More information is needed to update the status of action items that were competed or cancelled during 2019. This information will be incorporated into the Final Source Control Status Report.

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3.0 Upper Reach Source Control Areas

The Upper Reach includes eight source control areas; five areas are located on the east side of the LDW, and three areas are located on the west side:

East Side:	Report Section
RM 4.9 East (EAA-7: Norfolk CSO/SD)	3.1
RM 4.3-4.9 East (Boeing Developmental Center)	3.2
RM 3.9-4.3 East (Slip 6)	3.3
RM 3.7-3.9 East (EAA-6; Boeing Isaacson/Central KCIA)	3.4
RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge)	3.5
West Side:	
RM 4.2-5.8 West (Restoration Areas)	3.6
RM 3.8-4.2 West (Sea King Industrial Park)	3.7
RM 3.2-3.8 West (EAA-5: Terminal 117)	3.8

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

Source control activities specific to each source control area during the current reporting period are summarized in Section 3.1 through 3.8 below.

Several Ecology cleanup sites are located on the east side of the Upper Reach: Emerald Gateway (formerly Unified Grocers), Boeing Developmental Center, Boeing Field Chevron, 8801 Site, Boeing Isaacson Thompson, and Jorgensen Forge. In addition, the former Rhone-Poulenc Site, Boeing Plant 2, and the Jorgensen Forge sediment and outfall sites, which are under EPA oversight, are located within this source control area.

One cleanup site under Ecology oversight (South Park Marina) is located on the west side of the Upper Reach. The Terminal 117 Site, which is under EPA oversight, is also located on the west side of the Upper Reach.

3.1 RM 4.9 East (EAA-7: Norfolk CSO/SD)

The RM 4.9 East (EAA-7: Norfolk CSO/SD) source control area includes Boeing parcels adjacent to the LDW, the southern portion of KCIA, and upland properties in the Norfolk and I-5 (Ryan Street) SD basins (Appendix A). The Norfolk CSO/PS17 EOF/SD as well as the Henderson/MLK Wet Weather Treatment Station discharge to the LDW within this source control area.

3.1.1 Business Inspections

SPU conducted 19 inspections at 14 facilities in the Norfolk CSO/PS17 EOF/SD basin during the current reporting period, including 15 initial inspections and 4 follow-up inspections (Appendix C).

Ecology conducted a stormwater compliance inspection at the Boeing Military Flight Center on August 13, 2019 (Ecology 2019al [12335]). Details about this inspection are provided in Appendix E, Table E-1. Additional WQ updates are listed in Appendix E, Table E-4.

3.1.2 Source Tracing

During the current reporting period, SPU collected six storm drain solids samples in this drainage basin, including four sediment trap samples, one in-line solids sample, and one catch basin sample. In addition, one surface dirt sample was collected.

Complete sample results for the current reporting period are presented in Appendix F. Screening level exceedances are summarized in Table 3-1 below. Sample locations are shown on Figures A-2 and A-3. BEHP exceeded the CSL in all five samples for which it was analyzed, with concentrations ranging from 2.1 to 16 mg/kg DW. Zinc and benzyl alcohol exceeded the CSL in two samples each.

Table 3-1. RM 4.9 East: Screening Level Exceedances in SPU Source Tracing Samples

Chemical Class	Chemical	Sediment Traps	In-line Grab	Catch Basin Grab	Surface Debris
Metals	Zinc	×	×	☒	☒
PCBs	PCBs, total	×			na
Phthalates	BEHP	☒	☒	☒	na
	Butylbenzyl phthalate	×		×	na
	Dimethyl phthalate	×			na
Phenols	4-Methylphenol	☒			na
Other SVOCs	1,2,4-Trichlorobenzene		×		na
	Benzyl alcohol	☒			na
	Benzoic acid	☒			na
	Hexachlorobenzene		☒		na
	Nitrobenzene		×		na

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).
na = not analyzed.

3.1.3 Facility-Specific Source Control Actions

Boeing Developmental Center - South

The Boeing Developmental Center (BDC) property straddles three source control areas. BDC-South is located in the RM 4.9 East source control area and it is discussed below. BDC-Central is discussed in Section 3.2.3; BDC-North is discussed in Section 3.3.3.

Address	9725 East Marginal Way S
Facility/Site ID	2101 (Boeing A&M Developmental Center)
NPDES Permit	WAR000146 (Boeing Developmental Center)
Current Operations	Research and development
Historical Operations	Aircraft manufacturing
Chemicals of Concern	PCBs, metals, solvents, petroleum hydrocarbons, and SVOCs
Media Affected	Soil, groundwater, stormwater, and sediment

- In February 2019, Ecology notified Boeing that Ecology conducted a Site Hazard Assessment at the BDC. Ecology determined that the site was contaminated with halogenated organics, PCBs, metals, and petroleum hydrocarbons (Ecology 2019k [12260], Ecology 2019l [12113], Ecology 2019j [12110]). Ecology ranked the BDC a 1 on Ecology's Hazardous Sites List (Ecology 2019d [12115]).
- Boeing submitted an Interim Action Work Plan (IAWP) to Ecology in March 2019 (Landau 2019b [11458]). The IAWP describes work that is required in three areas: AOC-05, SWMU-17 and SWMU-20.
- Ecology held a public comment period on the draft Agreed Order, draft IAWP, State Environmental Poly Act (SEPA) checklist, SEPA Determination of Nonsignificance, and the draft Public Participation Plan from May 23, through June 21, 2019 (Ecology 2019q [11952], Ecology 2019s 11953]).
- In July 2019, Boeing and Ecology signed Agreed Order No. DE-16275 which required Boeing to complete an RI/FS, IAWP, and to prepare a preliminary draft cleanup action plan (CAP) at the BDC site (Ecology 2019ah [12263]).
- In August 2019, Ecology conducted a stormwater compliance inspection and concluded that the BDC no longer needed to sample discharge for DC1 because the area had been converted to parking. Ecology indicated that the facility's Stormwater Prevention Plan (SWPPP) needs to be updated with all potential sources of PCBs and the BMPs implemented to eliminate PCBs and other contamination in stormwater (Ecology 2019aj [12334]).

Boeing Military Flight Center

Address	10002 East Marginal Way S
Facility/Site ID	14532 (Boeing Military Flight Center)
NPDES Permit	WAR000150 (Boeing Military Flight Center)
Current Operations	Flight line support, including aircraft storage, preparation for flight, general servicing, maintenance, and repair.
Historical Operations	Aircraft operations since 1958. Prior to 1958, the site was used for machinery salvage and farming, and as a department store.
Chemicals of Concern	Volatile organic compounds (VOCs), PCBs, PAHs, metals, and petroleum hydrocarbons
Media Affected	Stormwater, storm drain solids, soil

Boeing has been conducting source control and cleanup work at the Military Flight Center (MFC) to address PCBs present in stormwater flowing offsite from the facility, in certain building materials, and in offsite soils. Stormwater discharges at the MFC are covered under the ISGP (WAR000150).

- In January 2019, Ecology notified Boeing that Ecology conducted a Site Hazard Assessment at the Boeing MFC. Ecology determined that the site was contaminated with PCBs (Ecology 2019b [12171]). Ecology ranked the Boeing MFC a 2 on Ecology's Hazardous Sites List (Ecology 2019e [12180]).
- Ecology conducted a stormwater compliance inspection on August 13, 2019 (Ecology 2019al [12335]). Ecology concluded that the Boeing MFC facility needed to monitor a new discharge sampling point for Area 1 that covers the runoff from Stall 75. The sampling point for Area 4 should be moved from MH-1.1M to CB-1.26C. The inspector observed an unmapped catch basin in Area. The facility will work with KCIA to identify the catch basin and update the SWPPP. Ecology indicated the facility SWPPP needed to be updated to identify any remaining areas of PCB contamination that may contribute to stormwater and with BMPs to address the sources.
- Boeing continued to develop a plan to treat stormwater within their site. Construction is anticipated for 2020 (King County 2020b [12426]).

Emerald Gateway (formerly Unified Grocers and Northwest Auto Wrecking)

The former Unified Grocers property at 3301 S Norfolk Street and the former Northwest Auto Wrecking property at 10230 East Marginal Way S were purchased by Prologis-Exchange (Prologis) in 2016. The Site is now referred to as the Emerald Gateway Site. Prologis plans to redevelop this site as a warehouse and distribution center.

Address	3301 S Norfolk Street, Seattle 10230 East Marginal Way South, Tukwila
Facility/Site ID	73338176 (Unified Grocers 3301 Norfolk)
NPDES Permit	WAR002040 (Terminated 9/28/2018)
Current Operations	Warehouse and distribution center
Historical Operations	Commercial warehousing of food products, truck maintenance and repair operations, truck refueling facilities, gasoline service station, automobile wrecking and parts.
Chemicals of Concern	Copper, mercury, zinc, PCBs, PAHs, cPAHs, phthalates, dioxins/furans, and petroleum hydrocarbons
Media Affected	Stormwater and storm drain solids

- Prologis submitted a draft RI, Focused FS and CAP to Ecology in January 2019 (Farallon 2019a [12191]).
- In June 2019, Prologis submitted a Sampling and Analysis Plan for the Pre-Interim Action Design Investigation (Farallon 2019e [11884]).
- Prologis submitted a draft IAWP to Ecology in August 2019. The IAWP includes excavating the contaminated soil and disposing of it at an offsite permitted facility, installing new stormwater conveyance and treatment systems, and dewatering groundwater to facilitate soil removal (Farallon 2019f [11976]).
- Ecology negotiated an Agreed Order with Prologis to investigate contamination. Under the Agreed Order Prologis must complete a RI/FS and a draft CAP for the site.
- In October and November 2019, Ecology held a comment period for the draft Agreed Order, the draft IAWP, and the draft Public Participation Plan (Ecology 2019ap [11956], Ecology 2019aq [11957]). The Agreed Order was expected to be signed in January 2020.

Boeing Field Chevron

The Boeing Field Chevron site is located south of the RM 4.9 East source control area, but is discussed here because Ecology identifies this site as an LDW cleanup site.

Address	10805 Tukwila International Boulevard
Facility/Site ID	2551 (Chevron Station 6009 3099)
NPDES Permit	None
Current Operations	Service station with underground gasoline storage
Historical Operations	Same as current (since 1940)
Chemicals of Concern	Petroleum hydrocarbons, VOCs
Media Affected	Soil and groundwater

In July 2015, Ecology, Chevron, the RPNP Corporation, and Rajbir and Pradeep Sandhu signed Agreed Order DE-10947 for upland cleanup at this site. This includes completion of an RI/FS and draft CAP (Ecology 2015d [12274]).

- In January 2019, Ecology sent Chevron a technical memo with their comments on the draft FS Pilot Test Workplan (dated August 29, 2018). Ecology indicated that all of their comments would need to be addressed in the Pilot Study or in the FS report (Ecology 2019c [12118]).
- G-Logics (on behalf of Chevron) submitted a FS Pilot Test Workplan to Ecology in February 2019. The workplan describes the methods and procedures to conduct an air sparge/soil vapor extraction pilot test. The purpose of the pilot test is to facilitate preparation of the FS (G-Logics 2019a [12224]).

- G-Logics conducted an air sparge/soil vapor extraction pilot test at Boeing Field Chevron on May 1-3, 2019 (Kennedy Jenks 2019b [11990]).
- In August 2019, G-Logics submitted the FS Pilot Test Report to Ecology. This report presented the purpose, approach and results of the FS Pilot Test to assess the effectiveness of air sparge and soil vapor extraction remedial technologies at this site (G-Logics 2019c [11980]).
- G-Logics submitted the Proposed Cleanup Action Alternatives to Ecology in October 2019. In November 2019 Ecology sent G-Logics comments on the Proposed Cleanup Action Alternatives. Ecology's comments include the expectation that G-Logics add an additional "Gold Standard" Cleanup Alternative to the list of cleanup alternatives. (Ecology 2019bb [11954]).
- G-Logics continued to prepare the Draft RI/FS report through the fall and winter of 2019.

3.2 RM 4.3-4.9 East (Boeing Developmental Center)

The RM 4.3-4.9 East (Boeing Developmental Center) source control area is shown in Appendix A. This source control area consists of a single facility, the central portion of BDC, referred to as BDC-Central. The BDC-South is discussed in Section 3.1.3 (RM 4.9 East); BDC-North is discussed in Section 3.3.3 (RM 3.9-4.3 East).

3.2.1 Business Inspections

Ecology conducted a stormwater compliance inspection at Boeing Developmental Center on August 8, 2019 (Appendix E, Table E-1).

3.2.2 Source Tracing

No source tracing activities were conducted at BDC during this reporting period, except as described in Section 3.2.3 below.

3.2.3 Facility-Specific Source Control Actions

Boeing Developmental Center - Central

- In February 2019, Ecology notified Boeing that Ecology conducted a Site Hazard Assessment at the BDC. Ecology determined that the site was contaminated with halogenated organics, PCBs, metals, and petroleum hydrocarbons (Ecology 2019k [12260], Ecology

Address	9725 East Marginal Way S
Facility/Site ID	2101 (Boeing A&M Developmental Center)
NPDES Permit	WAR000146 (Boeing Developmental Center)
Current Operations	Research and development
Historical Operations	Aircraft manufacturing
Chemicals of Concern	PCBs, metals, solvents, petroleum hydrocarbons, and SVOCs
Media Affected	Soil, groundwater, stormwater, and sediment

2019l [12113], Ecology 2019j [12110]). Ecology ranked the BDC a 1 on Ecology's Hazardous Sites List (Ecology 2019d [12115]).

- Boeing submitted an IAWP to Ecology in March 2019 (Landau 2019b [11458]). The IAWP describes work that is required in three areas: AOC-05, SWMU-17 and SWMU-20.
- Ecology held a public comment period on the draft Agreed Order, draft IAWP, SEPA checklist, SEPA Determination of Nonsignificance, and the draft Public Participation Plan from May 23, through June 21, 2019 (Ecology 2019q [11952], Ecology 2019s 11953]).
- In July 2019, Boeing and Ecology signed Agreed Order No. DE-16275 which required Boeing to complete an RI, FS, IAWP, and to prepare a preliminary draft CAP at the BDC site (Ecology 2019ah [12263]).
- In August 2019, Ecology conducted a stormwater compliance inspection and concluded that the BDC no longer needed to sample discharge for DC1 as the area had been converted to parking. Ecology indicated that the facility's SWPPP needs to be updated with all potential sources of PCBs and the BMPs implemented to eliminate PCBs and other contamination in stormwater (Ecology 2019aj [12334]).

3.3 RM 3.9-4.3 East (Slip 6)

The RM 3.9-4.3 East (Slip 6) source control area includes several properties adjacent to the LDW: the 8801 Site (also known as the former PACCAR Site, was occupied by Insurance Auto Auctions until late November 2019), the former Rhone-Poulenc Site, parcels owned by the Museum of Flight, and the northern portion of BDC (BDC-North). In addition, it includes stormwater drainage from the south-central portion of KCIA, which discharges to the LDW through KCIA SD#1. The RM 3.9-4.3 East source control area is shown in Appendix A.

3.3.1 Business Inspections

Ecology performed a source control inspection at Insurance Auto Auctions on January 3, 2019 (Ecology 2019a [11894]) (Appendix E, Table E-1).

3.3.2 Source Tracing

King County attempted to collect an annual storm drain solids grab sample in December 2019 from location KCIA1A, on the KCIA SD#1 storm drain line. A sample could not be collected or analyzed because the sediment trap sample at this location did not contain any solids.

King County collected a storm drain solids grab sample from location KCIA1UP which is located at the upgradient boundary of the KCIA SD#1 basin along Perimeter Road S to evaluate the potential for offsite inputs to the KCIA drainage system. The grab sample did not show any exceedances in 2019. This sample was composed of 85 percent gravel and contained a lower percentage of organic carbon than the 2018 sample from this location (Figure A-5).

King County sampling results are provided in Appendix G. BEHP exceeded the SCO in the KCIA1UP sample; there were no other screening level exceedances. King County will continue to sample the upgradient location as part of its sampling program (King County 2020b [12426]).

Facility-Specific Source Control Actions

8801 Site (Former Kenworth Truck / PACCAR)

In July 2006, PACCAR and Ecology signed Agreed Order No. DE-3599 to evaluate shoreline and nearshore sediments, seeps, and stormwater at the site. In November 2008, Ecology, PACCAR, and Merrill Creek Holdings (the property owner at that time) signed Agreed Order DE-6069 for upland cleanup, which includes completion of an RI/FS and IAWP (Ecology 2008c [06418]). Centerpoint Properties purchased the property from Merrill Creek Holdings in 2015. Agreed Order DE-6069 was amended to update the property owner in August 2017 (Ecology 2017 [11459]).

Address	8801 East Marginal Way S
Facility/Site ID	2072 (8801 E Marginal Way S)
NPDES Permit	WAR008681 (Insurance Auto Auctions Tukwila; terminated November 2019 when IAA vacated the site [Ecology 2019be [12434]])
Current Operations	Damaged vehicle storage
Historical Operations	Truck manufacturing
Chemicals of Concern	PCBs, PAHs, VOCs, phenols, phthalates, petroleum hydrocarbons, metals
Media Affected	Soil, groundwater, stormwater, and sediment

- The site was leased by Insurance Auto Auctions (IAA) until their lease expired in November 2019. IAA had removed all of the vehicles from the site as of an Ecology stormwater compliance inspection on January 3, 2019 (Ecology 2019a [11894]).
- Ecology held a public meeting on September 12, 2019. Ecology held a comment period from August 26 through October 9, 2019 on the public review draft FS, the Draft IAWP, the SEPA checklist and the Determination of Non-Significance (Ecology 2019p [11950]).
- PACCAR and Centerpoint submitted a public review draft FS to Ecology in June 2019. The FS included data from previous investigations collected on the 8801 property. This data was used to identify the chemicals of concern and the distribution of the contamination. The FS also identified the remedial action objectives and evaluated and selected the remedial alternatives. The alternatives include various combinations of soil treatment removal and containment as well as groundwater treatment in specific areas of the site (Shannon & Wilson 2019a [11886]).
- The IAWP describes the proposed approach for remediation of soil, groundwater, and protection of indoor air on the upland portion of the 8801 site (Shannon & Wilson 2019b [11887]). The IAWP includes the following cleanup actions:
    - Excavation of soil that contains high levels of contamination.
    - Enhanced Reductive Dechlorination which involves injecting an edible and non-toxic emulsified soybean oil mixture and bacteria into the groundwater in the norther-central portion of the property to enhance the natural breakdown of VOCs.
    - In Situ Chemical Oxidation (ISCO) which involves injecting an oxygen-containing compound into the groundwater in the northwestern corner of the property to treat petroleum hydrocarbons and VOCs.

  - Expanding an existing air sparge/soil vapor extraction system along the western portion of the property to treat groundwater before it enters the LDW.
  - Removal of PCB-contaminated caulk from an area on the north side of the property.
  - Maintaining the surface covers (buildings and pavement) throughout the property to prevent rainwater from flowing through contaminated soil.

- PACCAR submitted a SEPA environmental checklist that discusses the environmental impacts of the IAWP (Ecology 2019z [11951]). Ecology evaluated the work described in the IAWP and issued a determination of non-significance (DNS) indicating that the work described in the IAWP is not likely to have a significant adverse impact on the environment (Ecology 2019ak [11995]).
- An engineering design report for the work described in the IAWP is expected to be submitted to Ecology for review in 2020.

King County International Airport (KCIA) – South Central

The south-central area of KCIA is located within the RM 3.9 to 4.3 East source control area. The north-central portion of KCIA is discussed in Section 3.4.3. The north area is discussed in Section 4.1.3.

Address	7277 Perimeter Road S (main terminal); various tenant addresses
Facility/Site ID	2387398 (King Cnty International Airport)
NPDES Permit	WAR000343 (King County Int Airport); Tenant: WAR127177 (Charles Air Hangar Starbucks)
Current Operations	General aviation airport and related activities
Historical Operations	Military airport operations; general aviation
Chemicals of Concern	PAHs, phthalates, copper, zinc, petroleum hydrocarbons, and PCBs
Media Affected	Stormwater and, groundwater

- King County continues to collect annual sediment trap and in-line solids samples at location KCIA1A in the storm drain line discharging to the LDW at KCIA SD#1 (see Section 3.3.2).
- KCIA inspects all tenant and airport common areas monthly to ensure that BMPs are properly maintained, and to ensure that there are no illicit discharges or connections. Treatment BMPs such as oil water separators, water quality vaults, and StormFilter systems were installed and are being maintained. KCIA performs stormwater line cleaning in accordance with the ISGP. All stormwater line cleaning was completed in 2017. Stormwater line cleaning is expected to start in 2021 (King County 2020b [12426]).

Boeing Developmental Center - North

Address	9725 East Marginal Way S
Facility/Site ID	2101 (Boeing A&M Developmental Center)
NPDES Permit	WAR000146 (Boeing Developmental Center)
Current Operations	Research and development
Historical Operations	Aircraft manufacturing
Chemicals of Concern	PCBs, metals, solvents, petroleum hydrocarbons, and SVOCs
Media Affected	Soil, groundwater, stormwater, and sediment

The BDC property straddles three source control areas. BDC-North is located in the RM 3.9-4.3 East source control area and it is discussed below. BDC-South is discussed in Section 3.1.3; BDC-Central is discussed in Section 3.2.3.

- In February 2019, Ecology notified Boeing that Ecology conducted a Site Hazard Assessment at the BDC. Ecology determined that the site was contaminated with halogenated organics, PCBs, metals, and petroleum hydrocarbons (Ecology 2019k [12260], Ecology 2019l [12113], Ecology 2019j [12110]). Ecology ranked the BDC a 1 on Ecology's Hazardous Sites List (Ecology 2019d [12115]).
- Boeing submitted an IAWP to Ecology in March 2019 (Landau 2019b [11458]). The IAWP describes work that is required in three areas: AOC-05, SWMU-17 and SWMU-20.
- Ecology held a public comment period on the draft Agreed Order, draft IAWP, SEPA checklist, SEPA Determination of Nonsignificance, and the draft Public Participation Plan from May 23, through June 21, 2019 (Ecology 2019q [11952], Ecology 2019s 11953]).
- In July 2019, Boeing and Ecology signed Agreed Order No. DE-16275 which required Boeing to complete an RI/FS, an IAWP, and to prepare a preliminary draft CAP at the BDC site (Ecology 2019ah [12263]).
- In August 2019, Ecology conducted a stormwater compliance inspection and concluded that the BDC no longer needed to sample discharge for DC1 as the area had been converted to parking. Ecology indicated that the facility's SWPPP needs to be updated with all potential sources of PCBs and the BMPs implemented to eliminate PCBs and other contamination in stormwater (Ecology 2019aj [12334]).

3.4 RM 3.7-3.9 East (EAA-6: Boeing Isaacson / Central KCIA)

The RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) source control area includes the Boeing Thompson and Isaacson properties adjacent to the LDW and the north-central portion of KCIA, which is within the drainage basin for KCIA SD#2/PS45 emergency overflow (EOF) (Appendix A). King County refers to this drainage as the KCIA central drainage basin (King County 2020b [12426]).

3.4.1 Business Inspections

KCIA performs annual tenant inspections in accordance with its ISGP and municipal permit requirements. Ecology conducted a technical assistance inspection at the Mente Hangar facility on Perimeter Road on May 29, 2019 (Ecology 2019x [12353]).

3.4.2 Source Tracing

KCIA did not collect annual in-line sediment trap grab samples at locations KCIA2 and KC-SPS in 2019. According to their SCIP, King County deferred annual sampling for 2 years starting in 2019 due to consistent low contaminant concentrations. Stormwater solids sampling will resume in 2021 to assess if conditions remain below the levels of concern for this basin (King County 2020b [12426]).

3.4.3 Facility-Specific Source Control Actions

Boeing Isaacson/Thompson

In April 2010, Boeing and Ecology entered into Agreed Order DE-7088 to conduct an RI/FS and prepare a draft CAP (Ecology 2010a [06812]). Boeing submitted an RI Report to Ecology in April.

Address	8625-8811 East Marginal Way S, Tukwila
Facility/Site ID	Facility Site ID: 2218 Cleanup Site ID: 1944
Current Operations	Storage of surplus vehicles
Historical Operations	Steel melting, forging, and fabricating, lumber
Chemicals of Concern	Antimony, arsenic, barium, cadmium, chromium, lead, mercury, nickel, zinc, PCBs, PAHs,
Media Affected	Soil, groundwater, stormwater

- Boeing submitted a Draft Final FS to Ecology in October 2019 (Landau 2019d [11993]).
- Ecology reviewed the Draft Final FS Report and prepared comments to send to Boeing in early 2020.

King County International Airport – North Central

Address	7277 Perimeter Road S (main terminal); various tenant addresses
Facility/Site ID	2387398 (King Cnty International Airport)
NPDES Permit	WAR000343 (King County Int Airport); Tenants: WAR002830 (Ameriflight Inc Hangar 5), WAR000607 (Landmark Aviation/Signature Aviation), WAR000434 (UPS Boeing Field), WAR305886 (Mente Hangar)
Current Operations	General aviation airport and related activities
Historical Operations	Military airport operations; general aviation
Chemicals of Concern	PAHs, phthalates, copper, zinc, petroleum hydrocarbons, and PCBs
Media Affected	Stormwater and groundwater

This area of KCIA includes Drainage Basin #2, which discharges to the LDW through the KCIA SD#2 outfall (Appendix A). The City of Tukwila's East Marginal Way stormwater drainage also discharges to this outfall. Stormwater discharges at KCIA are covered under the ISGP. Several tenants within KCIA are also covered by an ISGP and comply separately with Ecology requirements.

KCIA did not collect annual in-line sediment trap grab samples at locations KCIA2 and KC-SPS 2019. King County deferred annual sampling for 2 years starting in 2019 due to consistent low contaminant concentrations below LAET. Stormwater solids sampling will resume in 2021 to assess if conditions remain below the levels of concern for this basin.

KCIA inspects all tenant and airport common areas monthly to ensure that BMPs are properly maintained, and to ensure that there are no illicit discharges or connections. Treatment BMPs such as oil water separators, water quality vaults, and StormFilter systems were installed and are being maintained. KCIA performs stormwater line cleaning in accordance with the ISGP. All stormwater line cleaning was completed in 2017. Stormwater line cleaning is expected to start in 2021 (King County 2020b [12426]).

Mente Hangar started operations at the former DHL Express facility at 8075 Perimeter Road in October 2018. Mente Hangar requested a technical assistance inspection from Ecology which was performed on May 29, 2019 (Ecology 2019x [12353]). Ecology determined Mente did not need to sample both of the discharge points that the facility had been monitoring.

3.5 RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge)

The RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge) source control area consists of two facilities, Boeing Plant 2[22] and Jorgensen Forge, as shown in Appendix A. In addition, the 16th Avenue S (East) SD discharges to the LDW within this source control area.

3.5.1 Business Inspections

Ecology conducted a stormwater compliance inspection at Jorgensen Forge on July 9, 2019 (Ecology 2019ae [12347]) (see Section 3.5.3 and Appendix E, Table E-1).

[22] The northern portion of Boeing Plant 2, where stormwater discharges to Slip 4, is in the RM 2.8 East (EAA-3: Slip 4) source control area (Section 4.1).

3.5.2 Source Tracing

SPU collected an in-line grab sample along the east side of 16th Avenue S, upstream of the Boeing Plant 2 facility in June 2019. Zinc (1,300 mg/kg), BEHP (29 mg/kg DW), 2-methylphenol (0.82 mg/kg DW), benzoic acid, benzyl alcohol, and n-nitrosodiphenylamine exceeded the CSL in this sample. Motor-oil range hydrocarbons exceeded the MTCA Method A screening level.

King County collected a right-of-way catch basin sample in this source control area, from a catch basin located in the bike lane of the southbound approach to the South Park Bridge. The sample was analyzed for metals and TOC only. Zinc exceeded the SCO in this sample.

SPU and King County source tracing data are presented in Appendix F and G, respectively. Screening level exceedances are summarized in Table 3-2 below. Sample locations are shown on Figure A-7.

Table 3-2. RM 2.8-3.7 East: Screening Level Exceedances in Source Tracing Samples

Chemical Class	Chemical	In-line Grab (SPU)_	Right-of-Way Catch Basin Grab (King County)
Metals	Zinc	☒	×
Petroleum Hydrocarbons	Motor-Oil Range Hydrocarbons	☒	na
PCBs	PCBs, total	×	na
PAHs	Fluoranthene	×	na
Phthalates	BEHP	☒	na
	Dimethyl phthalate	×	na
Phenols	2-Methylphenol	☒	na
Other SVOCs	Benzyl alcohol	☒	na
	Benzoic acid	☒	na
	n-Nitrosodiphenylamine	☒	na
	Phenol	×	na

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).
na = not analyzed.

3.5.3 Facility-Specific Source Control Actions

Boeing Plant 2

Address	7755 East Marginal Way S
Facility/Site ID	2100 (Boeing Plant 2)
NPDES Permit	WAR000482
Current Operations	Airplane parts manufacturing
Historical Operations	Same
Chemicals of Concern	VOCs, PCBs, PAHs, metals, and petroleum hydrocarbons
Media Affected	Groundwater, stormwater, soil, and sediment

Boeing is conducting RCRA corrective actions at Boeing Plant 2 under an Administrative Order on Consent, issued by EPA to Boeing in 1994. This included corrective actions for both the upland area and the sediment/bank areas. Cleanup elements associated with PCBs are concurrently subject to various written approvals under TSCA. In August 2011, EPA issued its Final Decision and Response to Comments for Plant 2 Sediments, containing the final remedy for the Duwamish Sediment Other Area, Southwest Bank and other Plant 2 sediment areas.

Upland Cleanup

- In June 2019, Boeing submitted a proposed cleanup plan, including final corrective actions for areas where interim measures have been completed for the upland areas of the site to EPA (Congdon 2019a [12427]).
- EPA held a public comment period on the draft Cleanup Plan and on EPA's Statement of Basis from June 17 through August 1, 2019 (EPA 2019b [12370]).
- EPA received public comments on the draft cleanup plan in 2019. EPA will develop a response to comments on the proposed cleanup plan and its final corrective action decision for the cleanup of this site in 2020 (Congdon 2020b [12428]).

Jorgensen Forge

Address	8531 East Marginal Way S
Facility/Site ID	2382 (Jorgensen Forge Corp)
NPDES Permit	WAR003231 (Jorgensen Forge Corp)
Current Operations	Fabrication of specialized large-scale metal parts
Historical Operations	Fabrication of structural steel, tractor and road equipment; manufacture of Navy vessels; steel distribution
Chemicals of Concern	PCBs, VOCs, petroleum hydrocarbons, metals
Media Affected	Soil and groundwater

The Jorgensen Forge site is divided into an upland portion and a sediment portion. Ecology is the lead agency for the upland cleanup, EPA is the lead for the sediment cleanup.

On April 18, 2018, Jorgensen Forge announced that it will end operations at this location in 2018 (Jorgensen Forge 2018 [11521]).

- By December 2019, Jorgenson Forge intended to fully vacate this location. As part of the clean closure process, Jorgenson Forge planned to flush the storm system and cleaning the building gutters. They planned to survey the buildings and structures on-site for potential hazardous building materials to determine the extent of additional remediation that may be required. Jorgensen Forge planned to continue operation of the stormwater treatment system. Salvage and clean closure plans could

change depending on sale of the site and potential future owner's plans for building demolition (Ecology 2019ae [12347]).

Upland Cleanup

In March 2015, Ecology issued Enforcement Order DE-11167 requiring Jorgensen Forge to complete an RI/FS and to prepare a draft CAP for the upland portion of the site (Ecology 2015c [12172]). Jorgensen Forge declared bankruptcy in 2016.

- Ecology reviewed and commented on the first Draft RI Work Plan for Jorgensen in July 2018. Ecology expected to receive a revised RI Work Plan in April 2020.

Sediment Cleanup

Under a separate CERCLA removal action order, PCB-contaminated sediment and bank soils at the property were largely removed in 2014. Samples collected after the excavation indicated that some sediments were still contaminated.

- Jorgensen agreed to evaluate the need for additional cleanup work to address the remaining sediment contamination. Sampling to assess the need for further cleanup at this site was conducted in spring 2019. Jorgensen provided EPA with a draft Data Summary Report for this sampling effort in fall 2019 (Congdon 2019a [12427]).

3.6 RM 4.2-5.8 West (Restoration Areas)

The RM 4.2-5.8 West (Restoration Areas) source control area includes a mixture of restored habitats and industrial properties along the LDW shoreline (Appendix A). Industrial properties adjacent to the LDW, including the City of Seattle's Duwamish substation and associated outfalls, and upland properties in the Hamm Creek basin are located within the RM 4.2-5.8 West source control area.

3.6.1 Business Inspections

No business inspections were conducted in this source control area during the current reporting period.

3.6.2 Source Tracing

No source tracing samples were collected in the RM 4.2-5.8 West source control area during 2019.

3.6.3 Facility-Specific Source Control Actions

No facility-specific source control activities were identified during the current reporting period.

3.7 RM 3.8-4.2 West (Sea King Industrial Park)

The RM 3.8-4.2 West (Sea King Industrial Park) source control area includes a small portion of LDW shoreline and upland facilities within the S 96th Street SD basin (Appendix A).

3.7.1 Business Inspections

SPU conducted one initial inspection, at King Electrical Mfg. Company, during the current reporting period (Appendix C).

King County's Stormwater Services conducted 35 inspections at 24 facilities in this source control area during the current reporting period (Appendix D, Table D-2).

Ecology conducted seven stormwater compliance inspections at seven facilities in this source control area during the current reporting period (Appendix E, Table E-1).

3.7.2 Source Tracing

King County collected a sediment trap sample from location ST1 in the S 96th Street SD basin in March 2019 (Figure A-9) (King County 2020b [12426]). Phenanthrene, total cPAH TEQ, BEHP, and benzoic acid exceeded the CSL or RAL.

King County sample results are provided in Appendix G; screening level exceedances are summarized in Table 3-3 below.

Table 3-3. RM 3.8-4.2 West: Screening Level Exceedances in King County Source Tracing Sample (S 96th Street SD)

Chemical Class	Chemical	Sediment Trap
Metals	Zinc	×
PAHs	Phenanthrene	☒
	Fluoranthene	×
	Total cPAH TEQ	☒
Phthalates	BEHP	☒
	Dimethyl phthalate	☒
Other SVOCs	Benzoic acid	☒

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

Facility-Specific Source Control Actions

Beckwith and Kuffel / (Former FMH Materials Handling Solutions)

Beckwith & Kuffel entered the VCP (NW3119) to remediate halogenated volatile organic compounds (HVOCs) in groundwater

- In May 2019, Ecology requested follow-up information from Beckwith and Kuffel on the status of the VCP cleanup (Ecology 2019w [11889]).

- The PLPs submitted a Bioremediation Injection and Groundwater Monitoring status report to Ecology in June 2019. This report summarizes the well installation, baseline and post-injection groundwater monitoring activities, and the bioremediation injection event conducted at the site in January 2018 (Landau 2019c [11890]).

Address	1313 S 96th Street, Seattle
Facility/Site ID	Facility Site ID: 3533187 Cleanup Site ID: 7542
Current Operations	Sells, distributes and maintains pumps, blowers and compressors.
Historical Operations	Forklift maintenance
Chemicals of Concern	HVOCs, vinyl chloride, TCE
Media Affected	Groundwater, soil

The report suggest that the extent of the HVOC impacts to groundwater has been adequately characterized. No significant changes were observed post-injection that would indicate that biodegradation had been stimulated beyond the injected former excavation. Based on these results, the PLPs believe that injection to the permeable backfill of the former excavation is not effective for distributing the injection fluid to the wider plume for enhancement of biodegradation.

Evaluation of alternate methods for amending the impacted aquifer with electron donor is recommended. Additional groundwater monitoring and clear water injection testing are planned for July 2019. Additional electron donor injection was planned for August and September 2019 (Landau 2019c [11890]).

Precision Engineering

- Ecology requested that the PLPs conduct additional vapor intrusion investigation at the Precision Engineering site (Ecology 2019at [11967]).
- In October 2019, Ecology identified CL Frazier Properties, Dick Morgan, and Precision Engineering as PLPs for the release of hazardous substances at the Precision Engineering site (Ecology 2019au [11964], Ecology 2019av [11965], Ecology 2019aw [11966]).

Address	1231 South Director Street Seattle
Facility/Site ID	Facility Site ID: 2056 Cleanup Site ID: 4532
Current Operations	
Historical Operations	
Chemicals of Concern	Chlorinated solvents
Media Affected	Soil, groundwater

3.8 RM 3.4-3.8 West (EAA-5: Terminal 117)

The RM 3.4-3.8 West (EAA-5: Terminal 117) source control area includes Port of Seattle's Terminal 117, South Park Marina, and most of Boeing's South Park facility (Appendix A). It also includes the new 17th Avenue S SD system that was constructed as part of the Terminal 117 early action cleanup.

3.8.1 Business Inspections

King County Stormwater Services conducted an inspection at Rick's Master Marine on December 12, 2019 (Appendix D, Table D-2).

3.8.2 Source Tracing

SPU installed two sediment traps at the last maintenance hole before the outfall in the new 17th Avenue S SD in 2017. SPU retrieved the trap in June 2018, but there was insufficient material for analysis. It was immediately redeployed for another year. SPU retrieved the trap again in May 2019 and was able to obtain enough material for analysis of PCBs. The trap sample contained 0.68 mg/kg DW total PCBs, which exceeds the SCO (SPU 2020b [12419]).

3.8.3 Facility-Specific Source Control Actions

South Park Marina

South Park Marina is located on the west bank of the LDW, north of the Port of Seattle's Terminal 117. The A&B Barrel Co. conducted drum reconditioning at this location between the mid-1950s and 1961. South Park Marina has been operating at this location since 1970.

Address	8604 Dallas Avenue S
Facility/Site ID	44653368
NPDES Permit	WAG030045 (Boatyard General Permit)
Current Operations	Marina with boat storage and repair
Historical Operations	Resort and marina; drum reconditioning
Chemicals of Concern	PCBs, PAHs, VOCs, dioxins/furans, phthalates, pesticides, petroleum hydrocarbons, metals
Media Affected	Stormwater and storm drain solids

- Ecology finalized Agreed Order No. DE 16185 to perform an RI at the South Park Marina Site in April 2019 (Ecology 2019o [11971]). The PLPs for this site are South Park Marina Limited Partnership, the City of Seattle, and the Port of Seattle.

Terminal 117 and Adjacent Streets

EPA signed an Administrative Settlement Agreement and Order on Consent with the Port of Seattle and the City of Seattle to implement cleanup actions at Terminal 117 in June 2011. The Order required the Port of Seattle and the City to implement EPA's cleanup decision for the Terminal 117 EAA.

Address	8700 Dallas Avenue S
Facility/Site ID	37657495 (Malarkey Asphalt Company)
NPDES Permit	None
Current Operations	Port of Seattle operations (International Inspection, Construction Services)
Historical Operations	Asphalt manufacturing; untreated lumber storage
Chemicals of Concern	PCBs
Media Affected	Soil, groundwater, and sediment

The cleanup includes the marine sediments adjacent to Terminal 117, the former industrial facility on terminal property, and 10 acres of soil in the nearby streets and residential area. The cleanup was completed in 2016.

- The Port of Seattle sampled sediments at Terminal 117 in March 2019. The results will be summarized in a data report to EPA in spring 2020 (Congdon 2019a [12427]).
- SPU completed a drainage system that was constructed as part of the Adjacent Streets and Stormwater Infrastructure project for the Terminal 117 EAA in 2017. SPU retrieved the end-of-pipe trap installed in the 17th Avenue S storm drain in June 2018, but there was insufficient material for analysis. SPU retrieved the trap in May 2019 and was able to obtain enough material for analysis of PCBs. The trap sample contained PCB concentration of 685 µg/kg DW (SPU 2020b [12419]).

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4.0 Middle Reach Source Control Areas

The middle reach includes eight source control areas; four areas are located on the east side of the LDW and four areas are located on the west side:

East Side:	Report Section
RM 2.8 East (EAA-3: Slip 4)	4.1
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	4.2
RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	4.3
RM 1.7-2.0 East (Slip 2 to Slip 3)	4.4
West Side:	
RM 2.2-3.4 West (Riverside Drive)	4.5
RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	4.6
RM 2.1 West (1st Avenue S Storm Drain)	4.7
RM 1.6-2.1 West (Terminal 115)	4.8

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

Source control activities specific to each source control area during the current reporting period are summarized in Sections 4.1 through 4.8 below.

Several Ecology cleanup sites are located on the east side of the Middle Reach: North Boeing Field-Georgetown Steam Plant (NBF-GTSP), Crowley Marine Services 8th Avenue S, Whitehead Tyee, Fox Avenue Building, and Duwamish Marine Center. In addition, the former Boeing EMF, which is under EPA oversight, is located within this source control area.

Four cleanup sites under Ecology oversight are located on the west side of the Middle Reach: South Park Landfill, North Terminal 115, Industrial Container Services (ICS), and Douglas Management Dock.

Slip 4 is a cleanup site under EPA oversight within the Middle Reach.

4.1 RM 2.8 East (EAA-3: Slip 4)

The RM 2.8 East (EAA-3: Slip 4) source control area includes several properties adjacent to the LDW (Crowley Marine Services 8th Avenue S, Cedar Grove Composting, and the northern portion of Boeing Plant 2), the NBF-GTSP site, the northern portion of KCIA, and areas with stormwater drainage to the Georgetown and Interstate 5 (I-5) Slip 4 storm drains (Appendix A). Stormwater drainage from KCIA-North and most of the NBF-GTSP site discharges to Slip 4 via King County's KCIA SD#3. King County's East Marginal CSO Pump Station is also located at the head of Slip 4.

The Year 7 long-term monitoring sampling associated with the Slip 4 Early Action sediment cleanup took place on August 1, 2019. The monitoring results indicated that the sediment cap remains structurally sound and sediment continues to accumulate on top of the cap. Contaminant concentrations in Slip 4 surface sediments were not below applicable sediment quality standards. Concentrations of BEHP exceeded SMS criterion in two samples, concentrations of BBP

exceeded SMS criterion in two samples, concentrations of total PCBs exceeded SMS criterion in three samples, concentrations of fluoranthene exceeded SMS criterion in one sample, and zinc exceeded SMS criterion in one sample (Windward 2019e [12376a], [12376b]).

At the monitoring stations closest to the head of Slip 4, concentrations of BEHP and BBP were above the SMS benthic CSL and concentrations of PCBs, fluoranthene, and zinc were above the SMS criteria (King County 2020b [12426]).

4.1.1 Business Inspections

SPU conducted initial inspections at the Aero Motel Inn on East Marginal Way and a property titled "Robert P Cummings" on South Eddy Street (Appendix C). No other SPU inspections were conducted in this source control area during 2019.

KCIW inspects the Waste Management 8th Avenue S/Reload Facility (Crowley property) at least annually, since it is classified as a SIU and is regulated under a waste discharge permit. The facility was inspected in August 2019. In addition, hazardous waste inspections were conducted at North Boeing Field, First South Properties, and Marine Vacuum Service in the RM 2.8 East source control area during 2019 (Appendix D).

Ecology conducted a stormwater compliance inspection at North Boeing Field in July 2019 (Appendix E). Multiple compliance issues were identified, as described in more detail in Appendix E, Table E-1.

4.1.2 Source Tracing

Boeing, SPU, and/or KCIA have been sampling sediment traps in the storm drains discharging to Slip 4 since 2005 (Table 4-1). In 2011, Boeing installed a long-term stormwater treatment (LTST) system at NBF, which treats most of the stormwater discharging to Slip 4 from NBF and KCIA-North. The sediment traps are generally located upstream of the LTST system. Boeing discontinued sediment trap sampling at NBF in 2017. KCIA and SPU collected samples from some of the sediment traps in 2019.

In December 2019, KCIA collected sediment trap and grab samples from portions of the south-central and south subdrainage areas that are upgradient of the NBF Site. KCIA also collected samples from the upgradient portions of the north and north-central subdrainage areas in 2019 Boeing previously collected samples from these locations until 2017. KCIA resumed sampling in these two subdrainage areas in 2019. The north lateral upgradient sampling location was moved to a more accessible point further upgradient; this new location is referred to as T5C (Appendix G) (King County 2020b [12426]). It should be noted that King County collects samples upgradient of the NBF site. These samples do not represent inputs to the lateral lines from the NBF facility.

SPU collected one sediment trap sample and an in-line grab sample at location T6 along the I-5 SD (Figure A-11). The I-5 SD discharges to Slip 4.

PCBs were not detected in the sediment trap and grab samples collected upstream of NBF. The PCB concentration in the T6 sediment trap (along the I-5 SD to Slip 4) exceeded the SCO. Downstream sediment traps at NBF were not sampled in 2019. Sediment trap results are shown in Table 4-1 below.

Table 4-1. RM 2.8 East: PCB Concentrations in Slip 4 Sediment Traps

Sediment Trap Location	Range of All PCB Conc'ns, 2005-2018 (mg/kg DW)	2018 Samples (mg/kg DW)	2019 Samples (mg/kg DW)
T1 (Downstream end of north and north-central lateral SD)	0.62 – 420	ns	ns
T2 (Downstream end of south lateral SD)	0.010 – 1.5	ns	ns
T2A (Upstream of NBF on the south lateral SD)	<0.0061 – 1.0	0.61	<0.91
T3 (Downstream end of south-central lateral SD)	0.026 – 1.8	ns	ns
T3A (Upstream of NBF on the south-central lateral SD)	<0.02 – 0.73	<0.19	<0.30
T4 (Downstream end of north-central lateral SD)	0.24 – 2.8	ns	ns
T4A (Upstream of NBF on the north-central lateral SD)	<0.011 – 5.6	ns	<0.070*
T5 (Downstream end of north lateral SD)	2.1 – 800	ns	ns
T5A/T5A(2)/T5B/T5C (Upstream of NBF on the north lateral SD, now shifted to King County bypass line*)	0.086 – 0.67*	ns	<0.069*
T6 (I-5 SD at Slip 4)	<0.019 – 7.8	0.089	0.28

ns = not sampled
* Grab samples; no sediment trap samples collected.

Screening level exceedances in King County and SPU source tracing samples in RM 2.8 East source control area are summarized in Table 4-2 below. Complete results are provided in Appendix F and G.

Table 4-2. RM 2.8 East: Screening Level Exceedances in SPU and King County Source Tracing Samples

Chemical Class	Chemical	Sediment Traps	In-line Samples
Metals	Zinc	☒	☒
PCBs	PCBs, total	×	
PAHs	Individual HPAH compounds	☒	☒
	Total HPAHs	×	
	Total cPAH TEQ	☒	☒
Phthalates	BEHP	☒	
	Butylbenzyl phthalate	×	
	Dimethyl phthalate	×	
Other SVOCs	1,2,4-Trichlorobenzene		×
	4-Methylphenol	☒	
	Benzoic acid	☒	
	Benzyl alcohol	☒	
	Hexachlorobenzene		☒
	Hexachlorobutadiene		×
Petroleum Hydrocarbons	Diesel-range hydrocarbons	☒	
	Motor-oil range hydrocarbons	☒	

Table does not include storm drain solids samples collected as part of ongoing investigations at the NBF-GTSP site. Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

4.1.3 Facility-Specific Source Control Actions

Crowley Marine Services 8th Avenue S

DeNovo Seattle LLC (DeNovo) purchased this property in April 2014; the property is currently leased to Waste Management, which operates the Duwamish Reload Facility. This facility is used as a transfer facility for sediment offloading in support of sediment cleanup in the LDW and other regional sediment remediation projects. Contaminated uplands soils, predominantly petroleum-contaminated soils, are also transloaded at this facility.

Address	7400 8th Avenue S, Seattle 98108
Facility/Site ID	1940187 (Crowley Marine Services, Inc. 8th Avenue S) 63123962 (Alaska Logistics LLC)
NPDES Permit	WAR302034 (ISGP)
Current Operations	Transloading
Historical Operations	Manufacture of pipe, chain, hydraulic equipment, and concrete; machinery and scrap iron storage; sawmill, lumber distribution; creosote treatment
Chemicals of Concern	Metals, PAHs
Media Affected	Sediment, soil, groundwater, and stormwater storm drain solids

Ecology and property owner 8th Avenue Terminals negotiated Agreed Order DE-6721 in 2009 to conduct an RI/FS, implement interim actions if needed, and prepare a draft CAP (Ecology 2009d [06804]).

- 8th Avenue Terminals regained ownership of the property in early 2019.
- 8th Avenue Terminals submitted a Public Review Draft RI Report to Ecology in August 2019 (SLR 2019 [11883]). Ecology reviewed this report and provided comments on the Public Review Draft RI in December 2019. The report was approved for 8th Avenue Terminals to start work on the draft FS.

North Boeing Field / Georgetown Steam Plant Site

Agreed Order DE-5685 for the Norther Boeing Field-Georgetown Steam Plan (NBF-GTSP) site was signed by the PLPs (Boeing, City of Seattle, and King County) and Ecology, effective August 14, 2008 (Ecology 2008b [03425]), and was amended in February 2015 (Ecology 2015a [10933]). Under the terms of the Amended Agreed Order, the PLPs will complete an RI/FS and conduct interim actions, as appropriate.

Current Operations	Aircraft finishing and testing; aircraft research and development
Historical Operations	Electrical power generation; aircraft manufacturing, maintenance, and research
Address	GTSP: 6700 13th Avenue S, Seattle 98108 NBF: 7500 East Marginal Way S, Seattle 98108
Facility/Site ID	2050 (NBF-GTSP)
Chemicals of Concern	PCBs, PAHs, petroleum hydrocarbons, VOCs, SVOCs, dioxins/furans, metals
Media Affected	Soil, groundwater, stormwater, and soil vapor

- In March 2019, Boeing submitted a technical memorandum regarding the removal of material regulated under EPA's TSCA that was identified at the NBF-GTSP site during the NBF-GTSP RI activities in 2015 and 2016 and during characterization sampling

activities in November 2016 and January 2017. The materials identified during the NBF-GTSP RI activities and subsequent characterization sampling activities as containing total PCBs greater than or equal to 50 mg/kg included concrete joint material, paint, caulk, surface debris adjacent to the location where caulking was found to contain PCBs, and solids within an oil/water separator. Removal activities were conducted from 2015 through 2018 (Landau 2019a [12243]).

- Semi-annual groundwater monitoring was conducted at NBF in February 2019 and August 2019.
- In August 2019, the PLPs performed ground water injection treatment to support remedial dechlorination of VOCs at the 3-360 and 3-800 areas of NFB.
- In September 2019, the PLPs collected soil vapor samples for analysis of chlorinated VOCs at two offsite locations on residential properties on the west side of Ellis Avenue S, just west of the 3-360 area at NBF.

King County International Airport (KCIA) - North

Portions of KCIA are located within four separate source control areas. KCIA-North is included in the RM 2.8 East source control area and is discussed here.

This area of KCIA includes Drainage Basin #1, which discharges to the LDW through the KCIA SD#3 outfall. Stormwater discharges at KCIA are covered under the ISGP. Several tenants within KCIA are also covered by an ISGP and comply separately with Ecology requirements.

Address	7277 Perimeter Road S (main terminal); various tenant addresses
Facility/Site ID	2387398 (King Cnty International Airport)2051 (KCIA Maintenance Shop)
NPDES Permit	WAR000343 (King County Int Airport); Tenant: WAR010792 (KC WTD Georgetown Yard), WAR000226 (North Boeing Field)
Current Operations	General aviation airport and related activities
Historical Operations	Military airport operations; general aviation
Chemicals of Concern	PAHs, phthalates, copper, zinc, petroleum hydrocarbons, and PCBs
Media Affected	Stormwater and groundwater

KCIA inspects all tenant and airport common areas monthly to ensure that BMPs are properly maintained, and to ensure that there are no illicit discharges or connections. Treatment BMPs such as oil water separators, water quality vaults, and StormFilter systems have been installed and are being maintained. KCIA performs stormwater line cleaning in accordance with the ISGP. All stormwater line cleaning was completed in 2017. Stormwater line cleaning is expected to start in 2021 (King County 2020b [12426]).

KCIA performed data gap sampling of stormwater structures upgradient of the NBF-GTSP site in fall 2014. The sampling results identified elevated concentrations of PAH compounds, BEHP, and zinc. KCIA developed a source tracing plan for Slip 4 in 2018 to determine potential sources of contamination either at the KCIA or from stormwater upgradient of the KCIA. King County will implement this plan in 2020 through 2021(King County 2020b [12426]).

4.2 RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)

The RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) source control area (Appendix A) includes several properties adjacent to the LDW (Dawn Foods, Seattle Boiler Works, Seattle Iron & Metals (SIM), Pioneer Distribution, and Recology CleanScapes). In addition, it includes the S Myrtle Street and S Garden Street SD basins. Upland cleanup sites in this source control area include the Fox Avenue Building and Whitehead Tyee sites.

In 2019, SPU conducted weekly sweeping at S Myrtle Street as part of the Street Sweeping for Water Quality Program. The City of Seattle Department of Transportation swept S Myrtle Street 42 times in 2019. SPU also conducted quarterly inspections of catch basins and mainline maintenance holes from 2011 through 2019. The evaluation determined that the catch basins on S Myrtle Street accumulate solids or require maintenance similar to those in the rest of the LDW basins. SPU will continue quarterly inspections of catch basins and mainline maintenance holes (SPU 2020b [12419]).

4.2.1 Business Inspections

SPU conducted eight inspections at six facilities, including Seattle Boiler Works, during 2019 (Appendix C).

Ecology conducted two stormwater compliance inspections at two facilities in 2019 (Appendix E, Table E-1). This includes one inspection at the SIM Truck Parking site (also referred to as the Whitehead Tyee Site) and one at the Dawn Foods Products-Sea Dry Mix site.

4.2.2 Source Tracing

SPU collected one grab storm drain solids sample in the S Garden Street SD during 2019 (Figure A-12). Sampling results are provided in Appendix F, and screening level exceedances are summarized below. PCBs were detected at 6.8 mg/kg DW, well above the CSL of 1.0 mg/kg DW.

Table 4-3. RM 2.3-2.8 East: Screening Level Exceedances in SPU Source Tracing Samples

Chemical Class	Chemical	In-line Sample
Metals	Copper	☒
	Lead	☒
	Mercury	☒
	Zinc	☒
PCBs	PCBs, total	☒
Phthalates	BEHP	☒
	Butylbenzyl phthalate	☒
	Dimethyl phthalate	☒
Other SVOCs	4-Methylphenol	☒
	Benzyl alcohol	☒
	Phenol	×

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

4.2.3 Facility-Specific Source Control Actions

Fox Avenue Building

On June 18, 2012, Ecology and Fox Avenue Building LLC signed Agreed Order DE-8985 to conduct cleanup actions at the site (Ecology 2012a [09837]).

Cleanup actions at the site include thermal treatment of the chlorinated VOC compounds, followed by bio-polishing, until remediation levels are met.

Address	6900 Fox Avenue
Facility/Site ID	2282
NPDES Permit	None
Current Operations	Chemical distribution
Historical Operations	Chain manufacturing; chemical and petroleum repackaging and distribution
Chemicals of Concern	VOCs, dioxins/furans, petroleum hydrocarbons
Media Affected	Soil, groundwater, and stormwater

- In March 2019, the PLPs submitted an annual report documenting the cleanup activities and monitoring that occurred in 2018 at the Fox Avenue Site (Floyd|Snider 2019b [12211]). Performance monitoring included the collection of site-wide groundwater samples in May 2018. Substrate was injected in August 2018 and January 2019.

  The annual report indicates that the remediation is progressing as designed. The data shows that four wells contain total chlorinated volatile organic (CVOC) concentrations above the remedial level of 250 µg/L. In addition, 18 wells and 1 seep have contaminant concentrations that are less than the clean up levels.

  Data through May 2018 indicate effective bioremediation in the Main Source Area and Fox Avenue S. Total CVOC concentrations in Fox Avenue S wells were less than the remedial level of 250 µg/L. One 1st Water Bearing Zone (WBZ) Well in the Main Source Area and one on the Whitehead property had CVOC concentrations greater than the site remedial level. All 2nd WBZ wells were at concentrations less than the remedial level.

  The annual report included the following recommendations for 2019:

  - Perform the annual site-wide groundwater monitoring event in Spring 2019,
  - Reduce the wells sampled in the 2nd WBZ of the Main Source Area due to the low and stable concentrations observed in this area since 2014,
  - Reduce monitoring at other areas of the site that are below or near the clean up levels, and
  - Target any additional treatment needed in Sumer 2019 after reviewing the Spring 2019 data.
- A periodic review started for the Remedial Action at this site in April 2019.
- Site-wide groundwater monitoring was conducted at this site in June 2019. The PLPs submitted a Technical Memo to Ecology in August 2019 summarizing the groundwater sampling data. Previous monitoring in May 2018 indicated a significant number of wells

throughout the site with reduced CVOC concentrations. The 2019 sample list was adjusted to focus on the remaining wells with elevated CVOC concentrations. The June 2019 data indicates that all but one well had CVOC concentrations below the remedial level of 250 µg/L. Samples taken from source area well RO-IW2D contained total CVOC concentration of 365 µg/L (Calibre 2019 [11891]).

Whitehead Tyee Site

The Whitehead Tyee Site is the location of the former Tyee Lumber facility. SIM and 730 Myrtle LLC have been identified as PLPs for this site. The site is also known as SIM Truck Parking. Ecology and SIM entered into Agreed Order DE-13458 in August 2016. The Order requires that the current property owner/operator complete a data summary report, an interim action, conduct an RI/FS, and prepare a draft CAP (Ecology 2016c [11068]).

Address	730 S Myrtle Street
Facility/Site ID	9809 (Seattle Iron & Metals Corp Truck Parking)
NPDES Permit	WAR125002 (Seattle Iron & Metals Corp Truck Parking)
Current Operations	Metal recycling
Historical Operations	Lumber finishing, refuse burning, wood treating
Chemicals of Concern	PCBs, PAHs, VOCs, pentachlorophenol, petroleum hydrocarbons, metals
Media Affected	Soil and groundwater

Ecology identified the following additional PLPs for this site in July 2018: the Fox Avenue Building, the Whitehead Company, Roberston-Ceco II Corporation and RCH Newco II, the City of Seattle, and the Reliable Transfer and Storage Company (Ecology 2018c [11305], 2018d [11306], 2018e [11307], 2018f [11308], and 2018g [11309]).

- SIM installed a Stormcapture Modular Wetland Treatment System, in October 2018. Upon commissioning of the treatment system, stormwater was not making it through the system to the point of discharge. Troubleshooting identified a leak in the system at the pre-treatment unit. As a result, no stormwater was discharged from the system in 2018. Repair work on the treatment system continued into early 2019.
- SIM conducted an interim action from July through December 2017.The interim action addressed limited areas of known soil contamination encountered during installation of a stormwater conveyance and treatment system. SIM submitted a draft Interim Action Completion Report to Ecology in August 2018. This document was in Ecology's review process through 2019. The Interim Action Completion report is expected to be finalized in early 2020.
- Ecology WQ conducted an inspection at this facility on November 3, 2019 (Ecology 2019bc [12365]).

Seattle Iron & Metals

Ecology issued an industrial NPDES individual permit for SIM in September 2013. The individual permit was modified and reissued in 2014. The permit was modified again in March 2015 to add water quality based effluent limits for ammonia and to correct the analytical testing protocol for PCBs (Ecology 2015b [12205]).

- On February 5, 2019, Ecology's Water Quality Program filed a Recommendation for Enforcement Action for unlawful discharge of polluting matter into the waters of the state, and for violation of the terms of a waste discharge permit. This facility operates a treatment system to remove pollutants from stormwater before discharging to the LDW. Monitoring results show that SIM exceeded the effluent limits in its NPDES permit 43 times between February 2017 and February 2019 (Ecology 2019h [11537]).

Address	601 S Myrtle Street
Facility/Site ID	94727791 (SIM)
NPDES Permit	WA0031968 (Individual)
Current Operations	Metals recycling
Historical Operations	Dangerous waste transport, construction, and machine shop
Chemicals of Concern	Metals (copper, lead, mercury, and zinc), petroleum hydrocarbons, and PCBs
Media Affected	Stormwater

  On February 11, 2019, Ecology issued a Notice of Penalty to SIM for NPDES permit violations of effluent limit exceedances (Ecology 2019i [12436]). Ecology fined SIM $98,000 for violating the limits on pollutant discharges in 2017 and 2018 (Ecology 2019m [11970]).

- Ecology WQ sent SIM a warning letter on September 18, 2019 informing SIM that their Discharge Monitoring Reports were out of compliance with the conditions listed in their 2019 NPDES permit. In this letter Ecology notes that exceedance of metal limits is a recurring problem at this facility and requires that SIM address the root source of this problem and propose a solution to prevent future exceedances (Ecology 2019ao [12437]).

4.3 RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)

The RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) source control area includes properties adjacent to the LDW and Slip 3 (SCS Refrigerated Services, Seattle Distribution Center, and Seatac Marine Services), as well as upland properties in the S River Street and S Brighton Street SD basins (Appendix A).

The S Brighton Street CSO formerly discharged at this location; SPU blocked this CSO in 2012 and it is no longer in use.

4.3.1 Business Inspections

SPU conducted five inspections at four facilities in the RM 2.0-2.3 East source control area during 2019, including four initial inspections and one follow-up inspection (Appendix C).

Ecology conducted three stormwater compliance inspections within this source control area during the current reporting period (Appendix E). Additional WQ updates are listed in Appendix E, Table E-4.

4.3.2 Source Tracing

SPU collected two storm drain solids samples and one surface debris sample in this source control area during the current reporting period, including two locations in the S River Street SD

and one in the S Brighton Street SD (Figure A-13). Results are presented in Appendix F; screening level exceedances are summarized below.

Table 4-4. RM 2.0-2.3 East: Screening Level Exceedances in SPU Source Tracing Samples

Chemical Class	Chemical	In-line Samples	Surface Debris Sample
Metals	Zinc	☒	×
PCBs	PCBs, total	×	
PAHs	Individual HPAH compounds	×	☒
	Total HPAHs		☒
	Total cPAH TEQ	☒	☒
Phthalates	BEHP	☒	×
	Butylbenzyl phthalate	×	×
	Dimethyl phthalate	☒	☒
Other SVOCs	n-Nitrosodiphenylamine	☒	

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

4.3.3 Facility-Specific Source Control Actions

Riverside Industrial Park

Address	6533 Third Avenue South Seattle
Facility/Site ID	6704154
Current Operations	Commercial buildings, warehouse
Historical Operations	Single family residence, truck maintenance facility, cabinet manufacturing shop
Chemicals of Concern	Petroleum hydrocarbons, lead
Media Affected	Soil, groundwater

- The consultants for Toth Construction conducted subsurface characterization in May and June 2019. The subsurface assessment activities indicate that concentrations of petroleum hydrocarbon previously identified in the soil at this site have attenuated and the previously determined contaminant mass has decreased. Further evaluation of soil is recommended (Aerotech 2019b [12396]).
- Aerotech collected groundwater samples from eight groundwater monitoring wells in the second quarter of 2019. Petroleum Hydrocarbon fuel additive and lead concentrations were below MTCA Method A cleanup levels in groundwater samples collected from five of the groundwater monitoring wells (Aerotech 2019a [12395]).

4.4 RM 1.7-2.0 East (Slip 2 to Slip 3)

The RM 1.7-2.0 East (Slip 2 to Slip 3) source control area includes properties adjacent to the LDW and Slip 2, including Glacier Northwest, General Biodiesel, Samson Tug & Barge, and Duwamish Marine Center, and upland facilities in the 1st Avenue S (East) and Head of Slip 2 SD

basins (Appendix A). In addition, King County's Michigan CSO (also referred to as the South Michigan CSO) discharges to the LDW at approximately RM 1.9; upland facilities associated with the Michigan combined sewer basin are included with this source control area.

4.4.1 Business Inspections

SPU conducted four inspections at General Biodiesel during 2019 (Appendix C).

Ecology conducted one stormwater compliance inspection each at Duwamish Metal Fabrication and Samson Tug and Barge during 2019 (Appendix E, Table E-1). Additional WQ updates are listed in Appendix E, Table E-4.

4.4.2 Source Tracing

No source tracing samples were collected in this source control area during 2019.

In 2020, King County plans to conduct a source investigation in the S Michigan CSO basin to evaluate potential sources of mercury in the system close to the regulator station (King County 2020b [12426]).

4.4.3 Facility-Specific Source Control Actions

Duwamish Marine Center

Ecology and the property owner entered into Agreed Order DE-8072 on September 2, 2011 (Ecology 2011d [07731]). The Order requires that the property owner/operator conduct an RI/FS to define the nature and extent of contamination in soil, groundwater, surface water, and sediments, and to evaluate cleanup alternatives. In addition, the property owner/operator is required to prepare a draft CAP that identifies the preferred cleanup action and develops a schedule to remediate the contamination.

Address	16 S Michigan Street; 6365 1st Avenue S
Facility/Site ID	21945598 (Duwamish Marine Center) 71371939 (Duwamish Marine Center, Inc.) 1020256 (Samson Tug & Barge)
NPDES Permit	WAR011484 (ISGP)
Current Operations	Tug and barge operations; metal fabrication
Historical Operations	Repair and maintenance of floating vessels; junk dealer; construction services; barge shipping terminal
Chemicals of Concern	PCBs, PAHs, petroleum hydrocarbons, metals
Media Affected	Soil and groundwater

- Duwamish Marine Center submitted the Public Review Draft of the RI Report to Ecology in July 2019 (G-Logics 2019b [11788]). Ecology provided comments on the Public review Draft RI report in December 2019. The report was approved for Duwamish Marine to begin work on the draft FS.

Georgetown Wet Weather Treatment Station

King County is developing four parcels as the site of the Georgetown Wet Weather Treatment Station. Previously, this property was referred to as Winters Investment LP/Riveretz's Auto Care. The Georgetown Wet Weather Treatment Station is currently under construction. Onsite work started in April 2017 and construction is expected to be completed in 2022. This project involves a significant dewatering and soil excavation project.

Address	6185 4th Avenue S
Facility/Site ID	55698119 (Riveretz's Auto Care) Cleanup Site ID: 14744
NPDES Permit	None
Current Operations	Wet Weather Treatment Station
Historical Operations	Restaurants, retail and warehouse space, auto repair, and service station
Chemicals of Concern	Metals, VOCs, petroleum hydrocarbons
Media Affected	Soil and groundwater

King County designed the Georgetown Wet Weather Treatment Station to reduce the discharge of pollutants to the LDW by controlling combined sewer overflows from outfalls located at the ends of S Michigan Street and S Brandon Street.

The project includes the construction of the Wet Weather Treatment Station at the corner of 4th Avenue S and S Michigan Street. The project also includes modifying the combined sewer conveyance pipe network in the area and will install a new outfall structure adjacent to the 1st Avenue S Bridge to release the treated water into the LDW.

- In 2019 the Georgetown Wet Weather Treatment Station was in the construction phase. Construction is expected to be completed by December 2022 (King County 2020b [12426]).

Kelly Moore Paint Company

Kelly Moore Paint Company operated at this site from 1994 to 2008. Kelly Moore entered the VCP (NW2305) in 2010 and completed an RI/FS in 2011. The southern portion of the site was sold to JST Georgetown, LLC in 2011. The northern portion of the site was sold to NCD GeorgeTown, LLC in 2014. NCD GeorgeTown, LLC demolished the buildings and warehouses on the northern portion of the property in 2015.

Address	5410 Airport Way S
Facility/Site ID	2163
NPDES Permit	None
Current Operations	Brewery
Historical Operations	Paint manufacturing plant, auto garage and wrecking yard, service station
Chemicals of Concern	PCBs, metals, SVOCs, VOCs, petroleum hydrocarbons
Media Affected	Soil and groundwater

- Kelly Moore submitted Additional Monitoring Well Installation Work Plan to Ecology in April 2019. This work plan describes the installation of two new monitoring wells as part of the soil and groundwater investigations at this site (Wood 2019a [11931]).
- In October 2019, Kelly Moore submitted the 2018 Summary of Investigations and Remedial Actions (2018 Summary) to Ecology. This report summarizes the site activities

conducted in 2018. The dry season and wet season groundwater sampling events were conducted in August 2018 and February 2019. The soil vapor extraction system operated during 2018 and 2019. The air sparge system started operating in May 2019 (Wood 2019b [11927]).

- Kelly Moore requested an opinion from Ecology on their proposed independent cleanup. In November 2019 Ecology VCP determined that the following additional work is needed to characterize the groundwater plume at this site:
    - Preliminary soil and groundwater screening levels need to be established for the site characterization work.
    - Additional monitoring wells are needed to characterize the groundwater plume at the site.
    - Additional site characterization is needed for other media, including soil and soil vapor (Ecology 2019bd [11932]).

Scougal Rubber

Address	6239 Corson Avenue
Facility/Site ID	93637295
NPDES Permit	None
Current Operations	Rubber manufacturing
Historical Operations	Same
Chemicals of Concern	Chlorinated solvents
Media Affected	Soil and groundwater

Scougal Rubber entered Ecology's VCP (NW1707) and developed a Remedial Action Plan to address chlorinated solvents in soil and groundwater on this site. A remedial excavation was performed at the site in April 2017 to remove residual trichloroethylene (TCE) contamination in soil. An oxidation infiltration system was installed in the excavation to address the remaining TCE contamination in soil and residual chlorinated solvent contamination in groundwater.

- The PLPs submitted a remedial action update to Ecology in August 2019 (PGG 2019 [11994]). Remedial action at this site focuses on reduction of chlorinated solvent concentrations in soil and groundwater. This technical memorandum summarizes the remedial actions conducted at Scougal Rubber between November 2017 and July 2019.
    - Supplemental groundwater characterization was conducted in April, June, and August of 2018 and in July 2019. Samples were collected from five monitoring wells on the Scougal Rubber property and the adjacent Ewing property.
    - In April 2018, MW-13 had the highest TCE concentration (31 µg/L). In July 2019 the concentration of TCE at MW-13 was 6.7 µg/L.
    - For all five monitoring events from April 2018 through July 2019 none of the wells exceed MTCA Method C cleanup levels for surface water in groundwater.
    - Remedial application of in-situ chemical oxidation was conducted 2018 and 2019 to address the extent of groundwater contamination.

- Oxidation infiltration events were conducted in January, April, and June 2018, and in February 2019. The groundwater concentrations do not exceed MTCA Method C cleanup levels for groundwater protective of surface water.
- The PLPs stated that they believe this site should be recommended for no further action (PGG 2019 [11994]).

4.5 RM 2.2-3.4 West (Riverside Drive)

The RM 2.2-3.4 West (Riverside Drive) source control area includes the 7th Avenue S SD basin and most of the 8th Avenue combined sewer basin (Appendix A). Facilities adjacent to the LDW include Pacific Pile & Marine and Independent Metals Plant 2 (now closed), and United Site Services. The City of Seattle's 7th Avenue S SD and King County's 8th Avenue CSO discharge to the LDW within this source control area. The 8th Avenue CSO is controlled to no more than one untreated discharge event per year, on average.

4.5.1 Business Inspections

SPU conducted a total of 12 inspections at 9 facilities during the current reporting period, including 9 initial inspections, and 3 follow-up inspections (Appendix C).

Ecology conducted three stormwater compliance inspections (Machinists Inc. Plant 5, Pacific Pile & Marine Main Yard, and United Site Services of Nevada) during 2019.

KCIW conducted hazardous waste inspections at Machinists, Inc. Plant 5 (former Gear Works facility), National Products, Inc., and Washington Liftruck.

4.5.2 Source Tracing

SPU collected three sediment trap samples and two in-line grab samples in the 7th Avenue S SD during 2019 (Figure A-16). Results are provided in Appendix F; screening level exceedances are summarized in Table 4-5 below.

Table 4-5. RM 2.2-3.4 West: Screening Level Exceedances in SPU Source Tracing Samples

Chemical Class	Chemical	Sediment Traps	In-line Solids
Metals	Zinc	×	
PCBs	PCBs, total	×	
Phthalates	BEHP	☒	☒
	Butylbenzyl phthalate	×	×
Other SVOCs	2-Methylphenol	☒	
	4-Methylphenol	☒	☒
	Benzoic acid	☒	
	Benzyl alcohol	☒	☒

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

4.5.3 Facility-Specific Source Control Actions

Independent Metals Plant 1/Independent Metals Storage Lot

Ecology sent an Early Notice Letter to Independent Metals in February 2014. Independent Metals subsequently filed for bankruptcy and ceased operations in 2014. All Service Moving occupies this property and uses the site for storage and administrative operations.

Address	747 S Monroe Street (Plant 1) 703 S Monroe Street (Storage Lot)
Facility/Site ID	9309618 (Plant 1) 21489 (Storage Lot)
NPDES Permit	None
Historical Operations	Scrap metals sorting, recycling, and processing.
Chemicals of Concern	PCBs, PAHs, phthalates, metals
Media Affected	Stormwater, soil, groundwater

- In May 2019, Ecology accepted a VCP application submitted by GO Spectrum Northwest for the Independent Metals Storage Lot site (VCP NW 3223). (Ecology 2019u [11961]).
- The PLPs requested an opinion from Ecology on the independent cleanup at the Independent Metals Storage Lot.

  In October 2019, Ecology determined that the characterization of the soil and groundwater at this site is not sufficient to establish cleanup standards and select a cleanup action. On-site soil and groundwater require further characterization. Ecology also stated that follow-up stormwater sampling will be necessary at this site (Ecology 2019ax [11962]).

Independent Metals Plant 2/Silver Bay Logging

The property owner conducted an interim soil cleanup at the site in 2018. Contaminated soil was removed over a total area of about 0.32 acres down to depths of 2 to 16 feet. An estimated 723 cubic yards of metal and diesel contaminated soil and 286 cubic yards of soil characterized as dangerous waste was removed.

Address	7760 8th Avenue S
Facility/Site ID	861945
Current Operations	Industrial
Historical Operations	Residential, boat building and repair, log storage and shipping, gas station with large battery storage area, concrete wash tray manufacturer, warehouse and packing of products manufacturer of synthetic harnesses
Chemicals of Concern	Petroleum hydrocarbons, PCE, vinyl chloride, metals and arsenic
Media Affected	Groundwater, soil

- In April 2019, SPU prepared a memo summarizing the current information about soil and groundwater contamination at the site.

  SPU recommended that the property owner continue to clean up the site as an independent action under MTCA. After cleanup is complete, SPU will prepare a site closure report describing the cleanup. Monitoring will be particularly important in the areas where groundwater contamination has been found.

SPU estimated that approximately 30 additional soil borings and as many as five additional monitoring wells would likely be needed. Site cleanup would primarily involve removing and disposing of the contaminated soil remaining on the property. Additional work will be needed to address groundwater contamination (SPU 2019b [12417]).

Duwamish Waterway Park

Address	7900 10th Avenue S, Seattle
Facility Site ID	49919
Cleanup Site ID	15139
Current Operations	Public park
Chemicals of Concern	arsenic, lead
Media Affected	Soil

The Seattle Parks and Recreation Department (Seattle) investigated soil contamination at the portion of the Duwamish Waterway Park located on Seattle City land in 2014 and 2019.

Surface soil samples collected in 2014 contained concentrations of arsenic that exceeded MTCA Method A cleanup levels. Deeper soil samples were collected in 2019. Concentrations of arsenic and lead exceeded the Method A cleanup level in some of the deeper soil samples (ECC 2019a [12385], ECC 2019b [12387]).

- Ecology sent an Early Notice Letter to Seattle Parks and Recreation in February 2019. Ecology determined that contamination exists on this property and cleanup is required at this site (Ecology 2019f [12386]).
- Seattle plans to renovate this park in 2020 and 2021. Prior to park renovations, Seattle plans to conduct soil remediation work in the northeastern portion of the park. This work is scheduled to start in the fall of 2020. Seattle will then submit a RI Report to Ecology after the remediation work is complete. Park renovations are scheduled to be complete in the summer of 2021.
- The Port of Seattle controls a portion of the commercial waterway land (Port of Seattle "sliver") located in the northeastern area of the park. It is not known if contamination extends toward the LDW onto this Port property. Ecology plans to conduct a reconnaissance investigation to determine whether there is contamination on the portion of the park controlled by the Port of Seattle in 2021.

4.6 RM 2.1-2.2 West (EAA-2: Trotsky Inlet)

The RM 2.1-2.2 West (EAA-2: Trotsky Inlet) source control area includes facilities adjacent to the Trotsky Inlet (Douglas Management Company and ICS), and numerous parcels owned by Boyer Towing along the LDW shoreline (Appendix A). In addition, it includes facilities within the 2nd Avenue S SD basin and the 8th Ave CSO.

4.6.1 Business Inspections

SPU conducted a total of eight inspections at five facilities in this source control area in 2019, including five initial inspections and three follow-up inspections (Appendix C).

Ecology conducted three stormwater compliance inspections, one at Christensen Inc. (former Seaport Petroleum) and two at General Biodiesel during the current reporting period (Appendix E, Table E-1).

KCIW conducted three hazardous waste inspections in this source control area in 2019, two at Kerry Inc. (DaVinci Gourmet) and one at Industrial Container Services (Appendix D, Table D-1).

4.6.2 Source Tracing

No source tracing samples were collected in this source control area during the current reporting period.

4.6.3 Facility-Specific Source Control Actions

Industrial Container Services / Trotsky Property / Former Northwest Cooperage

Address	7152 1st Avenue S
Facility/Site ID	2154 (Industrial Container Services – WA, LLC)
NPDES Permit	None
Current Operations	Drum reconditioning
Historical Operations	Same as current operations
Chemicals of Concern	PCBs, PAHs, VOCs, pesticides, petroleum hydrocarbons, metals
Media Affected	Soil, groundwater, and sediment

Ecology entered into Agreed Order DE-6720 with Herman and Jacqualine Trotsky (owners) and ICS (operator) on May 18, 2010 (Ecology 2010b [06806]). The Agreed Order requires that the PLPs conduct an RI/FS to define the nature and extent of contamination in soil, groundwater, surface water, and sediments, and to prepare a draft CAP that identifies the preferred cleanup action and develops a schedule to remediate the contamination.

- ICS submitted the Public Review Draft RI Report in August 2019. Ecology provided comments on the Public Review Draft RI in December 2019. The report was approved for ICS to start work on the draft FS.
- ICS submitted a work plan to collect additional samples to better define oil and sediment contamination for the FS in August 2019. Ecology reviewed this work plan through the end of 2019.

Douglas Management Dock / Alaska Marine Lines

Current Operations	Shipping container and equipment storage
Historical Operations	Sand and gravel batch plant; school bus parking and maintenance
Address	7100 1st Avenue S
Facility/Site ID	97573251 (Douglas Management Dock)
NPDES Permit	WAR127039 (Alaska Marine Lines)
Chemicals of Concern	PCBs, petroleum hydrocarbons, metals
Media Affected	Soil and groundwater

Ecology entered into Agreed Order DE-8258 with 7100 1st Avenue S, Seattle, LLC (owner) on May 6, 2011. The Agreed Order requires that the owner conduct an RI/FS to define the nature and extent of contamination in soil, groundwater, surface water, and sediments, and to prepare a draft CAP that identifies the preferred cleanup action and develops a schedule to remediate the contamination (Ecology 2011b [06425]).

- Douglas Management submitted the Public Review Draft RI Report to Ecology in August 2019 (GeoEngineers 2019 [11525]). Ecology provided comments on the Public Review Draft RI to Douglas Management in December 2019. The report was approved for Douglas Management to start work on the draft FS.

4.7 RM 2.1 West (1st Avenue S Storm Drain)

The RM 2.1 West (1st Avenue S Storm Drain) source control area includes upland facilities within the 1st Avenue S SD basin (Appendix A). There are no properties adjacent to the LDW in this source control area.

4.7.1 Business Inspections

SPU conducted a total of eight inspections at six facilities in the 1st Avenue S storm drain basin during the current reporting period (Appendix C), including five initial inspections and three follow-up inspections.

Ecology conducted four stormwater compliance inspections at four facilities within this source control area during 2019 (Appendix E). Additional WQ updates are listed in Appendix E, Table E-4.

KCIW conducted one hazardous waste inspection in this source control area in 2019, at MAPSCO (Appendix D, Table D-1).

4.7.2 Source Tracing

SPU collected four sediment trap samples, one in-line solids sample, one onsite sample, and two debris samples (one dirt and one window caulking) in the 1st Avenue S storm drain basin during 2019 (Figure A-18). A very high concentration of PCBs was detected in the window caulking sample; total PCBs were present at 71,000 mg/kg DW, although the Aroclor 1248 result was rejected during data validation. Results are provided in Appendix F; screening level exceedances are summarized in Table 4-6 below.

Table 4-6. RM 2.1 West: Screening Level Exceedances in SPU Source Tracing Samples

Chemical Class	Chemical	Sediment Traps	In-line Solids	On-site CB Solids	Surface Debris
Metals	Zinc	☒		×	na
PCBs	PCBs, total	×			☒
PAHs	Individual HPAH compounds	☒		☒	na
	Total HPAHs	×		×	na
	Total cPAH TEQ	☒		☒	na
Phthalates	BEHP	☒			na
	Butylbenzyl phthalate	×	×		na
Other SVOCs	1,2,4-Trichlorobenzene		×		na
	2-Methylphenol	☒			na
	4-Methylphenol	☒			na
	Benzoic acid	☒			na
	Benzyl alcohol	☒	×		na

Chemical Class	Chemical	Sediment Traps	In-line Solids	On-site CB Solids	Surface Debris
	Hexachlorobenzene		☒		na
	Hexachlorobutadiene		×		na
	Phenol	×		×	na
Petroleum Hydrocarbons	Diesel-range hydrocarbons			☒	na
	Motor-oil range hydrocarbons			☒	na

Storm drain screening levels are listed in Table 2-4.
na = not analyzed

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

4.7.3 Facility-Specific Source Control Actions

Former South Park Landfill

Address	8200 2nd Avenue S
Facility/Site ID	2180
NPDES Permit	None
Current Operations	Solid waste transfer station, school bus parking
Historical Operations	Landfill, auto wrecking yard
Chemicals of Concern	VOCs, PAHs, landfill gas, petroleum hydrocarbons, phthalates, metals
Media Affected	Soil, groundwater and air

Ecology, the City of Seattle, and South Park Property Development entered into Agreed Order DE-6706 in May 2009 to conduct an RI/FS at the former South Park Landfill property and to prepare a CAP for this site (Ecology 2009a [06677]).

On February 1, 2016, Ecology and the City of Seattle signed an amendment to the Agreed Order to conduct an interim action at this site (Ecology 2016a [12280]).

Ecology issued a Final CAP for this site in March 2018. The CAP describes the cleanup action approved by Ecology for the "Settlement Area" portion of this site. The cleanup action for this portion of the site consists of a landfill cap/cover, landfill gas controls, stormwater controls, long-term monitoring of groundwater, long-term monitoring of the cap/cover, the landfill gas controls, and the groundwater, and environmental covenants (Ecology 2018a [11904]).

- On March 26, 2019, Ecology, the City of Seattle, and South Park Property Development signed a Consent Decree to conduct remedial actions and implement the CAP (Ecology 2019n [12438]).

  Hazardous substances documented at the Settlement Area and addressed as part of this Consent Decree are methane, arsenic, lead, iron, manganese, petroleum hydrocarbons, trichloroethene, 1,2-dichloroethene, vinyl chloride, phthalates and PAHs.

  This Consent Decree requires the City of Seattle and South Park Property Development to carry out the following remedial action measures:

  - Maintain a landfill cap/cover.
  - Install and operate landfill gas controls to prevent or mitigate subsurface migration of landfill gas into on-site and nearby buildings and structure.

  - Install and maintain stormwater controls to prevent stormwater from coming into contact with solid waste, to maintain the landfill cap/cover, and to meet regulatory requirements.
  - Conduct long-term monitoring of groundwater.
  - Conduct long-term monitoring of the cap/over, the landfill gas controls, and groundwater.
  - File environmental covenants.

- The City of Seattle submitted a Phase II Engineering Design Report to Ecology in October 2019 (Herrera 2019 [11987]). This report describes the landfill cap, landfill gas control, and surface water control element of SPU's South Transfer Station Phase II project development. The goals for this project are to close the SPU-owned portion of the former landfill, improve material recovery and diversion of self-haul materials at the Recycling and Reuse building, provide pedestrian access along 4th Avenue S, provide parking for transfer trailer and tractors, and to maintain space and include infrastructure for a future solid waste handling facility.

4.8 RM 1.6-2.1 West (Terminal 115)

The RM 1.6-2.1 West (Terminal 115) source control area includes facilities associated with the Port of Seattle's Terminal 115, including Northland Services and Lineage Seafreeze (Appendix A). In addition, it includes properties located within the Highland Park Way SW SD basin and portions of the SW Kenny Street CSO/SD basin. The Terminal 115 CSO and West Michigan CSO discharge to the LDW within this source control area.

4.8.1 Business Inspections

SPU conducted seven inspections at five facilities in this source control area during the current reporting period (Appendix C), including five initial inspections and two follow-up inspections.

Ecology conducted two stormwater compliance inspections at the Seafreeze Ltd Terminal during the current reporting period. The second inspection focused on the Orca Bay Foods portion of the facility.

KCIW conducted one hazardous waste inspection within this source control area during the current reporting period, also at the Seafreeze Ltd Terminal (Appendix D, Table D-1).

4.8.2 Source Tracing

SPU collected two sediment trap samples and one in-line solids grab sample in the Highland Park Way SW basin during the current reporting period. In the SW Kenny Street SD basin, SPU collected one sediment trap sample during 2019.

King County's T-115 CSO (which is within the source control area) is controlled by an overflow weir, not a regulator station. King County could not obtain access at or just upstream of this weir. A sediment trap sample was collected from a maintenance hold just north of the West Marginal Pump Station to represent potential discharges from the West Duwamish Interceptor at T-115 CSO. Concentrations of mercury were above the CSL (2LAET) at this location.

Results are presented in Appendix F and G, and screening level exceedances are summarized in Table 4-7 below.

Table 4-7. RM 1.6-2.1 West: Screening Level Exceedances in SPU Source Tracing Samples

Chemical Class	Chemical	Highland Park Way SW SD		SW Kenny Street SD T115 CSO
		Sediment Traps	In-line Solids	Sediment Traps
Metals	Mercury			☒
	Zinc	×	×	×
PCBs	PCBs, total	×		×
Phthalates	BEHP	☒	☒	☒
	Butylbenzyl phthalate	×	×	×
	imethyl phthalate	×	×	
Other SVOCs	Benzoic acid	☒	☒	☒
	Benzyl alcohol	☒	☒	☒
	n-Nitrosodiphenylamine	☒		
	Pentachlorophenol			☒

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

4.8.3 Facility-Specific Source Control Actions

North Terminal 115 (Former MRI Corporation)

Address	6000 West Marginal Way SW
Facility/Site ID	2177
Current Operations	Lumber distribution, vehicle storage
Historical Operations	Tin reclamation
Chemicals of Concern	PAHs, SVOCs, petroleum hydrocarbons, metals, PCBs
Media Affected	Soil and groundwater

Ecology and the Port of Seattle entered into an Agreed Order on March 2, 2011. Under Agreed Order DE-8099, the Port of Seattle is conducting an RI/FS and will prepare a draft CAP at this site (Ecology 2011a [06472]). The Port of Seattle submitted the first draft of the RI Report for the site in late 2017.

- Ecology provided comments on the Draft RI in December 2018. Ecology required the Port of Seattle to submit a second Draft RI in 2020.

5.0 Lower Reach Source Control Areas

This Lower Reach includes eight source control areas; five areas are located on the east side of the LDW, and three areas on the west side:

East Side:	Report Section
RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)	5.1
RM 1.0-1.2 East (King County Lease Parcels)	5.2
RM 0.9-1.0 East (Slip 1)	5.3
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	5.4
RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)	5.5
West Side:	
RM 1.3-1.6 West (Glacier Bay)	5.6
RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)	5.7
RM 0.0-1.0 West (Spokane Street to Kellogg Island)	5.8

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

The east side of the Lower Reach includes one Ecology TCP cleanup site (Snopac Property) and several Ecology HWTR cleanup sites within the Brandon CSO drainage basin: GE Aviation Division, West of 4th Site (Art Brass Plating, Blaser Die Casting, Capital Industries, and Burlington Environmental), and the Burlington Environmental/East of 4th Site. These sites are in the greater LDW source area although not within a source control area boundary; they are discussed with the RM 1.0-1.2 East source control area (Section 5.2). In addition, the Rainier Commons site is an EPA-lead cleanup site under TSCA.

The west side of the Lower Reach includes two Ecology TCP cleanup sites: Glacier Northwest/Reichhold Chemical and Duwamish Shipyard.

5.1 RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)

The RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) source control area includes three facilities adjacent to the LDW: Ardagh Glass (formerly Saint Gobain Containers), Longview Fibre, and CertainTeed Gypsum (Appendix A). Many upland facilities near this source control area are in the Brandon CSO basin; the Brandon CSO and the upland facilities within the combined sewer basin are discussed in Section 5.2 (RM 1.0-1.2 East).

5.1.1 Business Inspections

SPU conducted source control inspections at Certainteed Gypsum (November 2019) and Ardagh Glass (May and June 2019) during the current reporting period. Ardagh Glass was not in compliance during the May inspection but was in compliance during the follow-up inspection in June (see Appendix C).

King County conducts annual inspections at Ardagh Glass. This property was found to be compliant at the October 2019 inspection (King County 2020b [12426]).

Ecology conducted stormwater compliance inspections at Certainteed Gypsum (February 2019) and Ardagh Glass (March, July, and September 2019) during the current reporting period. Inspection findings are presented in Appendix E, Table E-1. Additional WQ updates are listed in Appendix E, Table E-4.

5.1.2 Source Tracing

No source tracing samples were collected in this source control area during the current reporting period.

5.1.3 Facility-Specific Source Control Actions

No facility-specific source control updates were identified during this reporting period.

5.2 RM 1.0-1.2 East (King County Lease Parcels)

The RM 1.0-1.2 East (King County Lease Parcels) source control area includes three facilities adjacent to the LDW (Cadman Seattle, United Western Supply, and J.A. Jack & Sons) (Appendix A). In addition, the Brandon CSO discharges to the LDW within this source control area. Groundwater contamination associated with facilities in the Brandon CSO basin has migrated off the properties and into the RM 1.2-1.7 East source control area (Section 5.1) and the RM 1.7-2.0 East source control area (Section 4.4).

5.2.1 Business Inspections

King County conducts annual inspections at the Lehigh-Cadman facility. At the November 2019 inspection, three catch basin lids/grates needed repair, which was accomplished in February 2020 (King County 2020b [12426]). King County inspected the J.A. Jacks facility in October 2019 and identified one strip drain that required cleaning. This work was performed in November 2019 (King County 2020b [12426]).

5.2.2 Source Tracing

No source tracing samples were collected within this source control area during 2019.

5.2.3 Facility-Specific Source Control Actions

East of 4th Site (Burlington Environmental / PSC Georgetown / Stericycle Georgetown)

Burlington Environmental operated a hazardous/dangerous waste treatment facility at this location until 2003. Soil and groundwater were contaminated by releases from past operations at the facility. Groundwater contamination has been detected on property to the east and north owned by the Union Pacific Railroad, and downgradient to the west and southwest, toward the LDW.

Address	734 S Lucile Street
Facility/Site ID	47779679
NPDES Permit	None
Current Operations	Storage area for corrective actions in progress at the facility
Historical Operations	Hazardous waste treatment and storage
Chemicals of Concern	Chlorinated VOCs, 1,4-dioxane, other SVOCs, PCBs, metals, petroleum hydrocarbons
Media Affected	Soil and groundwater

The site is also known as PSC Georgetown (PSC is the parent company) and Stericycle Georgetown (Stericycle Environmental Solutions acquired PSC Holdings in April 2014).

In 2005, this site was administratively divided into two units. The cleanup of the eastern portion of the site, located east of 4th Avenue S, is administered under Agreed Order DE-7347 (May 2010; amended July 2015) and its attached CAP.

The area to the west of 4th Avenue S has been investigated by three additional PLPs: Art Brass Plating, Blaser Die Casting, and Capital Industries, under separate 2008 Orders. The updates below relate to the East of 4th section of the PSC Georgetown site. Information about the West of 4th Site is provided in the next section.

- Ecology approved an Environmental Covenant for a portion of the Union Pacific Railroad's Argo yard in April 2019 (JZP 2019 [11988]). Some soil contamination remains in this portion of Argo yard that was used by Burlington Environmental. The restrictions in the Environmental Covenant include not drinking groundwater and not developing this area for residential use.
- A multi-year bioremediation project started in April 2016, targets chlorinated VOCs in groundwater within the area enclosed by the facility's barrier wall (installed in 2004). This involves semi-annual injections of anaerobic-biodegradation enhancements followed by short intervals of recirculation to distribute the enhancement material. Two injection/recirculation events occurred in 2019. The last event is scheduled for May 2020.
- Stericycle submitted the revised Full Scale ISCO Work Plan to Ecology in July 2019. This work plan summarizes the results of the ISCO pilot and bench testing as well as more recent data that has been collected in support of full scale implementation design (DOF 2019 [11948]).

  In December 2019 and January 2020, contractors working for Stericycle started implementing the groundwater cleanup action using ISCO to reduce levels of 1,4-dioxane in groundwater. This cleanup action involves injecting oxidant (sodium persulfate and hydrogen peroxide) into the groundwater contaminated with 1,4-dioxane. Groundwater monitoring was planned to begin immediately after the injections (Ecology 2019bg [11949]).

West of 4th Site (Burlington Environmental, Art Brass Plating, Blaser Die Casting, Capital Industries)

Groundwater contamination from the PSC Georgetown facility has migrated offsite toward the LDW. Three additional companies have also released chlorinated solvents in this area: Art Brass Plating, Blaser Die Casting, and Capital Industries.

Soils are contaminated at all of these facilities; in addition, groundwater contamination has been detected at each of the properties and downgradient to the west and southwest, toward the LDW. Cleanup activities have been underway at these facilities since 2008. The FS stage of the West of 4th Site cleanup is administered under Agreed Order DE-10402 (April 2014; amended November 2017).

Facilities and Addresses	Art Brass Plating (5516 3rd Avenue S) Blaser Die Casting (5700 3rd Avenue S) Capital Industries (5801 3rd Avenue S) PSC Georgetown (734 S Lucile Street)
Facility/Site IDs	88531932 (Art Brass Plating), 7118747 (Blaser Die Casting), 11598755 (Capital Industries), 47779679 (Burlington Environmental LLC Georgetown)
Historical Operations	Plating, die casting, metal fabrication
Chemicals of Concern	Chlorinated solvents, 1,4-dioxane, arsenic, cadmium, copper, nickel, and zinc
Media Affected	Soil, groundwater, and surface water

- Metals Immobilization Pilot Study
    - Injections for the Metals Immobilization raised the groundwater pH, but not as high as needed (Farallon 2019b [11974]). The PLP Group conducted a lab study to see if different chemicals or difference concentrations could be more effective.
    - The PLP Group submitted a second revision of the In Situ Metals Immobilization Pilot Study Field Implementation Work Plan Addendum to Ecology on Jul 12, 2019. Ecology approved the revised In Situ Metals Immobilization Pilot Study Field Implementation Work Plan Addendum on July 17, 2019 (Ecology 2019ag [11934]).
    - In August 2019, a second injection event was conducted. This time using a solution of both sodium bicarbonate and sodium hydroxide. The second injection was more effective at raising the pH in the groundwater.
    - In late August 2019, this study entered a monitoring phase.
- CVOC Pilot Study
    - The CVOC Pilot Study started in October 2018 and continued in 2019. This study targets contaminated groundwater approaching the LDW.
    - This study was in its monitoring phase throughout 2019. Monitoring results indicate that the chemicals injected into groundwater to chemically reduce and biodegrade contaminants have been effective and have dramatically reduced TCE levels.
- Immobilization Pilot Study near Art Brass Plating (Site Unit 1)
    - This is an area where elevated levels of nickel and other metals are present in groundwater. This study will determine the best way to raise groundwater pH and lower metals concentrations.
    - Based on results from the first stage injections, Ecology and the PLP Group decided not to proceed with the second stage of injections. Instead, in 2019 the PLP Group decided to study the feasibility of using soil vapor extraction (SVE) to treat Plant 4's contaminated soils.

A work plan for an SVE study was submitted to Ecology on April 5, 2019 (Farallon 2019c [11975]). The study was scheduled to be completed in the summer of 2019. The results of the study indicated that SVE was a feasible treatment technology for contaminated soils at Plant 4.

- The PLP Group plans to work on completing a joint FS in 2020.

GE Aviation/GE-Dawson Street Plan

Ecology approved a Focused FS in 2009. A 2014 Final Consent Decree requires conducting remedial actions; these include installation of multi-phased in-situ groundwater treatment, a hydraulic control system and a vapor intrusion mitigation system to meet soil, groundwater and indoor air cleanup levels.

Address	220 S Dawson Street
Facility/Site ID	2522
Current Operations	Warehouse
Historical Operations	Manufacture and repair of aircraft parts
Chemicals of Concern	TCE; PCE; 1,1,1-trichloroethane; fuels; and oil
Media Affected	Soil and groundwater

- In October 2019, Ecology conducted a five-year Period Review of the site conditions and monitoring data to ensure that human health and the environmental are being protected and to ensure that the cleanup methods are working (Ecology 2019as [11959]).
- Ecology held a public comment period for the five-year Periodic Review in November 2019 (Ecology 2019ba [11958]).
- Ecology requires environmental covenants at this site to restrict activities and to protect people from being exposed to contamination. The environmental covenants will keep owners from withdrawing groundwater, conducting activities that could mix deeper contaminated groundwater with water closer to the surface, conducting activities in areas where the soil and groundwater are contaminated, and conduct activities that could vaporize groundwater contaminants and impact indoor air quality.

Rainier Brewery Malt House Oil Cistern / Original Rainier Brewery

Address	5810 Airport Way S 5840 Airport Way S
Facility/Site ID	Facility Site ID: 41478228 Cleanup Site ID: 149664
Current Operations	
Historical Operations	Oil cistern
Chemicals of Concern	petroleum hydrocarbons, arsenic
Media Affected	Soil and groundwater

- On May 5, 2019, Ecology conducted an initial investigation at this site and determined that contamination exists at this site (Ecology 2019t [11969]). Ecology sent an early notice letter to the Original Rainier Brewery indicating that this site was added to this site to the database as a state cleanup site and assigned CSID 14964 (Ecology 2019aa [11968]).

- In June 2019, the Original Rainier Brewery sent Ecology a letter indicating that they are enrolling in the Pollution Liability Insurance Agency (PLIA) Petroleum Technical Assistance Program to cleanup releases associated with an old cistern on the property (Farallon 2019d [11978]).

5.3 RM 0.9-1.0 East (Slip 1)

The RM 0.9-1.0 East (Slip 1) source control area includes three properties adjacent to Slip 1: a portion of Federal Center South, the former Snopac Products property, and the northern part of Manson Construction (Appendix A). No public storm drain outfalls are located within RM 0.9-1.0 East.

5.3.1 Business Inspections

King County conducts annual inspections at the Manson Construction property. This property was found to be compliant at the October 2019 inspection (King County 2020b [12426]).

SPU conducted three source control inspections at two facilities in this source control area (the Mason Construction facilities at 5209 and 5053 East Marginal Way S) during the current reporting period (Appendix C).

Ecology WQ updates are listed in Appendix E, Table E-4.

5.3.2 Source Tracing

No source tracing samples have been collected in this source control area.

5.3.3 Facility-Specific Source Control Actions

Snopac Property

The Snopac Property was identified as a potential source of contamination to the LDW. Sediment samples collected in Slip 1 near the Snopac Property contained PAHs, PCBs, and metals above screening levels. A seep near the southwest corner of Slip 1 contained metals, including arsenic, copper, lead, mercury, and zinc, at concentrations above the marine chronic water quality standard.

Address	5053-5055 East Marginal Way S
Facility/Site ID	1523145, 3967301
Cleanup Site ID	12463
Current Operations	Construction equipment warehouse
Historical Operations	Disposal of spent sandblast grit, fish packing, marine equipment storage
Chemicals of Concern	Metals, PAHs, PCBs, petroleum hydrocarbons
Media Affected	Soil, groundwater, sediment

- Ecology sent a Preliminary Determination of Liability letter to the current owner of the property (5055 Properties) for the release of hazardous substances at the Snopac Property site in February 2019. In this letter Ecology indicated that they wanted to proceed with an Agreed Order for the remediation of this property (Ecology 2019g [12008]). 5055 Properties responded to Ecology in a letter dated February 26, 2019 (NW Resource 2019 [12009]).

- Ecology and 5055 Properties negotiated an Agreed Order in spring and early summer 2019. On June 18, 2019, Ecology and EPA hosted an open house for the community to discuss information about the Snopac Property site. Ecology held a comment period from June 10 through July 9, 2019 on the draft Agreed Order, draft IAWP and draft Public Participation Plan (Ecology 2019r [12011], Ecology 2019y [12401]).
- The PLPs submitted an IAWP to Ecology in June 2019. The plan for the interim action involved demolishing the warehouse building and installing a new shoring wall to stabilize the shore-face and to facilitate the removal of spent sandblast grit-containing fill on the uplands side of the shoring wall.

  Data collected during site investigation work indicates that fill soils located east of the shoring wall contain spent sandblast grit (SBG). This area is targeted for removal in the interim action. The estimated weight of SBG-containing fill soil to be excavated from the uplands during the interim action is approximately 3,500 tons.

  The uplands interim action cleanup east of the shoring wall includes shoring wall installation, removal of contaminated fill landward (east) of the shoring wall, engineering controls, and contingency removal. The shoring wall installation was scheduled to be completed in July 2019. The excavation and disposal of contaminated fill materials, dewatering and water management and excavation of backfill was expected to take place in August and September 2019 (Aspect 2019c [12010]).
- Ecology and 5055 Properties entered into an Agreed Order on July 15, 2019. Under Agreed Order DE-16300, 5055 Properties will complete an RI/FS, prepare a draft CAP for the site, and complete and implement a supplemental RI Work plan for an Interim Action (Ecology 2019af [12400]).
- In August 2019, the PLPs conducted additional sampling to characterize soil under the existing warehouse and to assess groundwater quality within the uplands portion of the site (Aspect 2019f [12399]).
- The PLP's submitted a RI Report in October 2019 (Aspect 2019f [12399]). The Agreed Order requires that the scope of the RI include both the uplands and in-water sediments portions of the site. The uplands portion of the site is regulated by Ecology while the in-water portion of the site is regulated by EPA.

  The RI found that site groundwater, groundwater seeps, soil, and Slip 1 sediments have been impacted by historical releases of hazardous substances from this property. Based on the analysis of the collective upland soil and groundwater/seeps data, the following analytes are proposed as COCs for the upland portion of this site: metals (arsenic, copper, lead, mercury, and zinc), PCBs, PAHs, and TPH (in a limited portion of the uplands). The RI identified the following COCs for the in-water sediment portion of this site: metals (arsenic, copper, lead, mercury, and zinc), PAHs, and total PCBs (Aspect 2019f [12399]).

GSA Federal Center South

Address	4735 East Marginal Way S
Facility/Site ID	10233917
Cleanup Site ID	5512
Current Operations	Federal offices
Historical Operations	Automobile assembly and showroom; U.S. Army general depot, missile production, motor pool
Chemicals of Concern	Petroleum hydrocarbons, benzene, non-halogenated solvents
Media Affected	Soil and groundwater

This property is currently undergoing an independent cleanup by the U.S. General Services Administration. Soil and groundwater are contaminated with petroleum hydrocarbons and chlorinated solvents. A pilot groundwater remediation study was completed in 2012 to assess the potential effectiveness of enhanced bioremediation in reducing concentrations of VC in groundwater. In 2012, all structures on the central and northwestern portion of the property were removed and a new office building was constructed.

A site characterization was conducted in 2015 to address areas of concern identified by Ecology (EHSI 2015 [12389]). Results indicated three areas on the Site where MTCA cleanup levels are exceeded in soil. In groundwater, several areas were identified with petroleum hydrocarbons and VOCs in comingled plumes with concentrations above MTCA Method A cleanup levels. TCE in groundwater exceeded cleanup levels in the north center portion of the Site; VC in groundwater exceeded cleanup levels on the east side of the Site. Based on results of the site characterization, Ecology identified numerous data gaps and determined that an RI report that summarizes all previous investigations is required (Ecology 2015e [12390]).

- In May 2019, GSA submitted a technical memo regarding the redevelopment, sampling, and analysis of twenty groundwater monitoring wells at the northern portion of the GSA Federal Center South facility.

  Nineteen groundwater monitoring wells were redeveloped in April 2019. Groundwater sampling took place May 13 through 16, 2019. Groundwater data suggest that petroleum hydrocarbon contamination persists in three locations where previously reported, with some reductions in concentrations due to natural attenuation. Vinyl chloride was not detected in the groundwater samples. TCE concentrations continue to exceed regulatory cleanup levels along the northern property boundary (Kane 2019 [12388]).

5.4 RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)

The RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) source control area includes Port of Seattle Terminals 106 and 108, and the northern portion of Federal Center South (Appendix A). In addition, it includes facilities within the Diagonal Avenue S and S Nevada Street SD basins. The Diagonal Avenue S CSO/SD outfall (which includes discharges from city and county CSOs) and King County's Duwamish East/Hanford #1 combined sewer pump station are located within this source control area.

5.4.1 Business Inspections

Ecology conducted four stormwater compliance inspections at three facilities within this source control area in 2019 (Appendix E, Table E-1). Additional WQ updates are listed in Appendix E, Table E-4.

KCIW conducted hazardous waste inspections at six facilities in this source control area during the current reporting period (Appendix D, Table D-1).

SPU conducted a total of 114 business inspections at 83 facilities in the Diagonal Avenue S CSO/SD and S Nevada Street drainage basins during the current reporting period (Appendix C).

Denver Avenue S PCB Spill

In June 2019, an SPU inspector discovered a PCBs spill in the right-of-way along Denver Avenue S between 1st Avenue S and 2nd Avenue S. SPU notified Ecology and EPA of this spill. Sampling confirmed that surface soil along the shoulder of Denver Avenue S contained up to 40,300 mg/kg DW PCBs. Solids in storm drain inlet on Denver Ave S contained 6,970 mg/kg DW PCBs.

The contaminated soil was located in an area 38 feet by 530 feet with PCB concentrations ranging from 0.1 to 14 mg/kg DW in the top six inches of soil. PCBs in the storm drain downstream of the inlet where soil initially entered the drainage system ranged from 4 to 69.4 mg/kg DW PCBs.

SPU and Seattle Department of Transportation (SDOT) conducted an EPA approved cleanup under TSCA in July and August 2019. SPU removed approximately 981 tons of non-regulated PCB-contaminated soil. Approximately 40 tons of regulated PCB-contaminated soil/storm drain solids were removed from the site and approximately 1,500 feet of pipe and associated structures on Denver Ave S were jetted and cleaned. SDOT backfilled and paved the road shoulder after the contaminated soil was removed. The soil samples collected at the bottom of the excavation prior to backfill contained <0.05 to 0.086 mg/kg DW PCBs (SPU 2019a [11549], SPU 2020b [12419]).

In 2019, SPU cleaned approximately 20,745 linear feet of pipe in the Diagonal Avenue S CSO/SD system along sections on 6th Avenue S and South Dakota Street. This work was conducted to remove solids that have accumulated in the MS4 in order to prevent them from discharging into the LDW and to facilitate source tracing efforts (SPU 2020b [12419]).

5.4.2 Source Tracing

SPU has collected hundreds of source tracing samples in the Diagonal Avenue S CSO/SD basin, including sediment trap samples, in-line solids samples, on-site catch basin samples, and right-of-way catch basin samples. During the current reporting period, five sediment trap samples; 16 in-line solids samples (including one field duplicate); 10 on-site catch basin samples; four right-of-way catch basin samples; and four surface debris samples were collected in this drainage basin (Figure A-25). In addition, four sediment trap samples were collected as part of SPU's sediment trap pilot study (see Section 2.3.1).

One in-line solids sample and three right-of-way catch basin samples were collected in the S Nevada Street SD in June 2019.

In 2018, total PCBs were detected in catch basin sample at MH18, located at 6th Avenue S and S Snoqualmie Street, at 46 mg/kg DW, over 350 times the lower screening level of 0.13 mg/kg DW. A sample was collected at this location in May 2019, and contained 3.1 mg/kg DW total PCBs. A right-of-way catch basin sample (RCB91) collected near the Seattle City Light loading dock contained 7,000 mg/kg DW PCBs, and another right-of-way catch basin (RCB92) located on the north side of Denver Avenue S, near the 4700 block of 1st Avenue S, contained 69 mg/kg DW PCBs. A surface dirt sample in this same area contained 40,000 mg/kg DW PCBs.

Complete SPU sample results for the current reporting period are presented in Appendix F; screening level exceedances are summarized in Table 5-1 below.

Table 5-1. RM 0.1-0.9 East: Screening Level Exceedances in SPU Source Tracing Samples

Chemical Class	Chemical	Sediment Traps	In-line Solids	On-site CB Solids	Right-of-Way CB Solids	Surface Debris
Metals	Arsenic	☒				na
	Copper		☒	☒		na
	Lead	☒	☒	☒		na
	Mercury	×	☒	☒		na
	Zinc	☒	☒	☒		na
PCBs	Total PCBs	☒	☒	☒	☒	☒
PAHs	Individual LPAH compounds		☒	☒	☒	na
	Total LPAHs			☒	☒	na
	Individual HPAH compounds	×	×	☒	☒	na
	Total HPAHs		×	☒	☒	na
	Total cPAHs		☒	☒	☒	na
Phthalates	BEHP	☒	☒	☒	☒	na
	Butylbenzyl phthalate	×	☒		☒	na
	Dimethyl phthalate	☒	☒	☒		na
	Di-n-octyl phthalate			☒		na
	1,2,4-Trichlorobenzene		☒	☒		na
Other SVOCs	2-Methylphenol		☒	☒		na
	4-Methylphenol	☒		☒	☒	na
	Benzoic acid	☒	☒	☒	☒	na
	Benzyl alcohol	☒	☒	☒		na
	Dibenzofuran			☒	☒	na
	Hexachlorobenzene		☒	☒		na
	Hexachlorobutadiene		☒	☒		na
	n-Nitrosodiphenylamine	☒	☒	☒		na
	Pentachlorophenol			☒		na
	Phenol		☒	☒	☒	na
Petroleum hydrocarbons	Diesel-range hydrocarbons		☒			na
	Motor-oil range hydrocarbons		☒	☒	☒	na

Storm drain screening levels are listed in Table 2-4.
na = not analyzed
** Not calculated because several results were rejected during validation.
× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

King County collected sediment trap samples at two locations within the Hanford #1 CSO basin. The two locations sampled were: the area of S Hanford Street and Martin Luther King Jr Way S, and the area of Rainier Avenue S and S Estelle Street. Mercury, silver, BEHP, 1,4-dichlorobenzene, 2-methylphenol, benzoic acid, pentachlorophenol, and phenol exceeded the CSL. Zinc exceeded the SCO. Complete King County sampling results for the current reporting period are presented in Appendix G.

5.4.3 Facility-Specific Source Control Actions

Port of Seattle Terminals 106 and 108

Address	1 S Idaho Street
Facility/Site ID	54918197
NPDES Permit	ConGlobal: WAR010569 (ISGP); Port of Seattle: WAR044701 (Municipal SW Phase 1 GP)
Current Operations	Shipping container and truck chassis storage and repair
Historical Operations	Same as current
Chemicals of Concern	Metals, PCBs, phthalates, PAHs, other SVOCs, and petroleum hydrocarbons
Media Affected	Soil, groundwater, stormwater, and storm drain solids

ConGlobal Industries, Ash Grove Cement, and Arctic Commercial Refrigeration operate on portions of the Port of Seattle's Terminal 106. Terminal 108 is currently occupied by ConGlobal Industries.

EPA and the Port of Seattle signed an Administrative Settlement Agreement and Order on Consent for Removal Action, Preliminary Assessment and Site Investigation at Terminal 108 on April 5, 2018.

- The Port submitted a Revised Final Preliminary Assessment report to EPA in February 2019 (Floyd|Snider 2019a [12369]). EPA determined that further investigation of the site is necessary. EPA intends to require an Engineering Evaluation/Cost Analysis (EE/CA) that studies and evaluates options for a removal action at this site (Congdon 2019a [12427]).

Rainier Commons / Former Rainier Brewery Property

Address	3100 Airport Way S
Facility/Site ID	9192461
Current Operations	Coffee roasting and storage, artist loft, and two restaurants
Historical Operations	Brewery
Chemicals of Concern	PCBs
Media Affected	Stormwater

The former Rainier Brewery property is currently known as Rainier Commons, a complex of 27 buildings. In 2004/2005, elevated concentrations of PCBs in a nearby catch basin led to the discovery of PCB-contaminated paint at this facility. The cleanup is being performed under EPA oversight.

Rainier Commons prepared a general work plan for removal of paint from building exterior surfaces, sampling of some substrates, and complete removal of paint from the interior stairwell

area in 2013. A Phase II work plan was submitted to EPA in April 2015. Abatement was completed for Phases I and IIa, which include the west side of Buildings 10 and 11, all of Building 13, and the south side of Building 15.

- Rainier Commons submitted the Exterior Paint Abatement Phase 1 Close-Out Report and Supplemental Documents to EPA. EPA reviewed the submittals. In May 2019 EPA determined that Exterior Paint Abatement Phase 1 is complete (EPA 2019a [11550]).
- Work continued on the phased removal of PCB-containing paint from outdoor and indoor surfaces at this complex of buildings in the fall of 2019 (Congdon 2019a [12427]).
- EPA is expected to approve the next phase of the PCB abatement in the spring of 2020 (Congdon 2020b [12428]).

Mount Baker Properties

The Mount Baker Housing Association (MBHA) plans to redevelop the cluster of lots where S McClellan Street intersects with Martin Luther King Jr Way S. This is located one block from Sound Transit's Mount Baker Link light rail station. MBHA plans to build 166 affordable housing units with street level retail.

Address	2800 MLK Jr. Way S, 2864 S McClellan Street, 2810 S McClellan Street, 2806 S McClellan Street, and 2802 S McClellan Street
Facility/Site ID	Facility Site ID: 96127971 / Cleanup Site ID: 13054
NPDES Permit	None
Current Operations	Housing Development
Historical Operations	Dry Cleaners, Gas Station, Auto Repair
Chemicals of Concern	Chlorinated solvents, petroleum hydrocarbons
Media Affected	Soil, groundwater, soil vapor

Ecology entered into a Prospective Purchaser Consent Decree with MBHA in 2016 which was amended and filed February 24, 2017. The Consent Decree requires MBHA to complete an RI and FS for the site.

- MBHA submitted a draft RI/FS to Ecology in September 2019 (Aspect 2019e [11940]). As part of the RI, the PLPs completed soil explorations, monitoring well installations, and soil, groundwater and soil gas sampling at the site. Cleanup is necessary to remediate the contaminated soil, groundwater, and soil vapor. The FS describes five cleanup alternatives and includes a disproportionate cost analysis.
- MBHA submitted a Draft CAP to Ecology in October 2019 (Aspect 2019g [11939]). The Draft CAP describes the cleanup identified in the FS. The plan includes soil excavation, institutional controls, in-situ chemical reduction, in-situ soil solidification, monitored natural attenuation, and monitoring all treatments following cleanup.
- Ecology evaluated the work described in the draft Cleanup Acton Plan and issued a DNS indicating that the work described in the CAP is not likely to have a significant adverse impact on the environment (Ecology 2019az [11947]).
- Ecology held a public comment period on the draft Prospective Purchaser Consent Decree Amendment, Draft RI/FS, Draft Cleanup Action Plan, SEPA checklist, and SEPA Determination of Nonsignificance from October 28 through November 26, 2019 (Ecology 2019ar [11946]).

Grand Street Commons

Grand Street Commons (GSC) plans to redevelop several properties in southeast Seattle for a mix of affordable and market-rate housing project. GSC is a partnership between MBHA, Lake Union Partners, and HAL Real Estate. This project is expected to be completed by 2023 when the new East Link light rail station is scheduled to open nearby. As part of the project, they plan to clean up about 3.2 acres of contaminated property.

Address	1750 22nd Avenue S Seattle
Facility/Site ID	Facility Site ID: 97763114/Cleanup Site ID: 3018
NPDES Permit	None
Current Operations	Housing development
Historical Operations	Manufacturing, welding, foundry, commercial dry cleaning, vehicle repair, service station
Chemicals of Concern	Petroleum hydrocarbons, benzene, xylenes, cadmium, lead, naphthalene, chlorinated solvents
Media Affected	Soil, groundwater

Ecology entered into Prospective Purchaser Consent Decrees with GSC and MBHA. The consent decrees require GSC and MBHA to complete an RI and FS to evaluate the extent of the contaminated area and to develop cleanup options.

- The PLPs submitted an RI work plan to Ecology on January 31, 2019 (Aspect 2019a 11937]). Ecology approved the RI work plan on March 14, 2019 (Aspect 2019b [11935]).
- In May 2019, the PLPs completed 17 soil borings, 4 soil gas samples and 16 shallow groundwater monitoring wells. Groundwater sampling was completed at 42 of the monitoring wells at the site (Aspect 2019d [11938]).

Washington State Department of Transportation (WSDOT) Signals Maintenance

WSDOT conducted a cleanup action in 2015 to remove three underground storage tanks and dispose of 562 tons of contaminated soil. Soil samples were collected at the bottom and sidewalls of the excavation to confirm removal of all contaminated soil. The results from these samples indicated contaminated soil was removed.

Address	3700 9th Avenue S
Facility/Site ID	60549963
NPDES Permit	None
Current Operations	Traffic signals maintenance facility
Historical Operations	Refueling facility for
Chemicals of Concern	Petroleum hydrocarbon
Media Affected	Soil, groundwater

A supplemental site investigation was conducted in 2017 to further evaluate the status of the contamination in soil and to assess if groundwater had been impacted. The activities included the installation of ten soil borings for soil and groundwater sampling within the former UST excavation and vicinity.

- A Supplementation Site Investigation Report was submitted to Ecology in January 2019. The results of the supplemental site investigation indicate that low levels of petroleum

hydrocarbons are present. Residual hydrocarbon concentrations were not found in soil or groundwater above MTCA cleanup levels at this site (Kennedy/Jenks 2019a [11991]).

- Ecology announced their plans to delist of this site and held a public comment period from July 19 through August 19, 2019 (Ecology 2019ad [11972]). Following the public comment period, Ecology removed the WSDOT Signal Maintenance site from the Hazardous Sites List.
- At the end of August 2019, Ecology sent WSDOT a no further action letter. Ecology determined that the cleanup actions conducted at this site meet state cleanup standards and no further action is needed (Ecology 2019am [11973]).

5.5 RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)

The RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) source control area includes properties adjacent to the LDW, including Ash Grove Cement, the Port of Seattle's Terminal 104, and Terminal 102 (Harbor Marina Corporate Center) on the southern end of Harbor Island (Appendix A).

5.5.1 Business Inspections

No business inspections were conducted in this source control area during 2019.

5.5.2 Source Tracing

No source tracing samples have been collected in this source control area.

5.5.3 Facility-Specific Source Control Actions

No facility-specific source control updates were identified during this reporting period.

5.6 RM 1.3-1.6 West (Glacier Bay)

The RM 1.3-1.6 West (Glacier Bay) source control area includes properties adjacent to the LDW (Alaska Marine Lines, Duwamish Shipyard, Glacier Northwest/West Marginal Way Site), and portions of the SW Kenny Street SD basin (Appendix A). The SW Kenny Street SD discharges to the LDW within the RM 1.6-2.1 West (Terminal 115) source control area, and is discussed in Section 4.8.

5.6.1 Business Inspections

SPU conducted two business inspections, one each at the Alaska Marine Lines facilities at 5600 and 5615 West Marginal Way SW, during the current reporting period (Appendix C).

5.6.2 Source Tracing

No source tracing samples were collected in this source control area during the current reporting period.

5.6.3 Facility-Specific Source Control Actions

Duwamish Shipyard

Address	5658 West Marginal Way SW
Facility/Site ID	2071 (DSI)
NPDES Permit	WAR001365 (ISGP, Alaska Marine Lines)
Current Operations	Equipment and container storage; truck access
Historical Operations	Repair and maintenance of floating vessels and equipment
Chemicals of Concern	PCBs, PAHs, SVOCs, tributyltin, dioxins/furans, petroleum hydrocarbons, metals
Media Affected	Soil, groundwater, stormwater, and sediment

Duwamish Shipyard entered into Agreed Order DE-6735 with Ecology on September 13, 2010 to conduct an RI/FS at the site (Ecology 2010c [06819]). Stormwater from this property is currently treated and discharged at the Alaska Marine Lines outfall under NPDES Permit WAR001365.

- A public review Draft RI was submitted to Ecology in April 2019 (Anchor 2019a [12264]).
- In a letter dated May 20, 2019, Ecology requested that Duwamish Shipyard perform two supplemental investigations: a tributyltin (TBT) investigation to collect data for the development of a site-specific TBT sediment cleanup level; and additional investigation of arsenic contamination in groundwater in the southwest portion of the property (Ecology 2019v [12269]).
- In June 2019, Ecology modified the Agreed Order schedule to accommodate the two supplemental investigations (Ecology 2019ab [11955]).
- In July 2019, Duwamish Shipyard submitted RI Addendum Work Plans for the TBT Bioaccumulation Study (Anchor 2019c [12267]) and the Arsenic Characterization Study (Anchor 2019d [12265]).
- In 2019, Duwamish Shipyard worked on developing the Draft FS Report (Anchor 2019b [11542]).
- Ecology expected the results from both of the supplemental investigations to be published in 2020.

Glacier Northwest

Glacier-Reichhold entered into Agreed Order DE-6000 with Ecology on July 28, 2009 to conduct an RI/FS at the site (Ecology 2009b [06908]).

- Ecology reviewed the Draft RI report and worked with the PLPs to complete the RI and move forward with the FS in 2019.

Address	5900-5902 West Marginal Way SW
Facility/Site ID	23881883 (Glacier Northwest Seattle Terminal) 67234947 (Glacier Northwest Marginal Way Truck Shop) 89139472 (Glacier Northwest, Inc. and Reichhold MTCA)
NPDES Permit	WAG503378 (Sand & Gravel GP)
Current Operations	Cement storage and distribution
Historical Operations	Manufacture of activated charcoal, resins, glues, pentachlorophenol
Chemicals of Concern	Pentachlorophenol, dioxins/furans, metals
Media Affected	Soil, groundwater, surface water, and sediment

5.7 RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)

The RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) source control area consists of a single property, Lafarge Cement (Appendix A). There are no public storm drains that discharge to the LDW within this source control area.

5.7.1 Business Inspections

KCIW inspects the Lafarge Cement facility at least annually, since it is classified as a SIU and is regulated under a waste discharge permit. The facility was inspected twice during the current reporting period, on March 18, 2019 and July 8, 2019 (Appendix D, Table D-1).

5.7.2 Source Tracing

No source tracing samples were collected during this reporting period.

5.7.3 Facility-Specific Source Control Actions

No facility-specific source control updates were identified during this reporting period.

5.8 RM 0.0-1.0 West (Spokane Street to Kellogg Island)

The RM 0.0-1.0 West (Spokane Street to Kellogg Island) source control area includes Port of Seattle Terminals 103, 105 and 107; General Recycling of Washington; and Herring's House Park (Appendix A). In addition, it includes properties in the SW Dakota Street and SW Idaho Street SD basins. The Duwamish West CSO pump station is located within this source control area.

5.8.1 Business Inspections

SPU conducted eight source control inspections at five facilities within this source control area in 2019, including five initial and three follow-up inspections (Appendix C). Ecology conducted one stormwater compliance inspection in this source control area in 2019, at Fog Tite (Appendix E, Table E-1).

5.8.2 Source Tracing

SPU collected three sediment trap samples in the SW Idaho Street SD basin and one in-line grab sample in the SW Dakota Street SD during the current reporting period (Figure A-29). Sample results are presented in Appendix F; screening level exceedances are summarized in Table 5-2 below.

Table 5-2. RM 0.0-1.0 West: Screening Level Exceedances in SPU Source Tracing Samples

Chemical Class	Chemical	Sediment Traps	Right-of-Way CB Solids
Metals	Zinc		×
PCBs	PCBs, total	×	×
PAHs	Individual HPAHs		×
Phthalates	BEHP	☒	☒
	Butylbenzyl phthalate	☒	×
	Dimethyl phthalate		☒
	Dibutyl phthalate	☒	
Other SVOCs	4-Methylphenol	☒	
	Benzoic acid	☒	
	Benzyl alcohol	☒	☒
	Phenol	×	

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2019).
☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2019).

5.8.3 Facility-Specific Source Control Actions

No facility-specific source control activities were identified during the current reporting period.

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Appendix A:
Source Control Area Maps

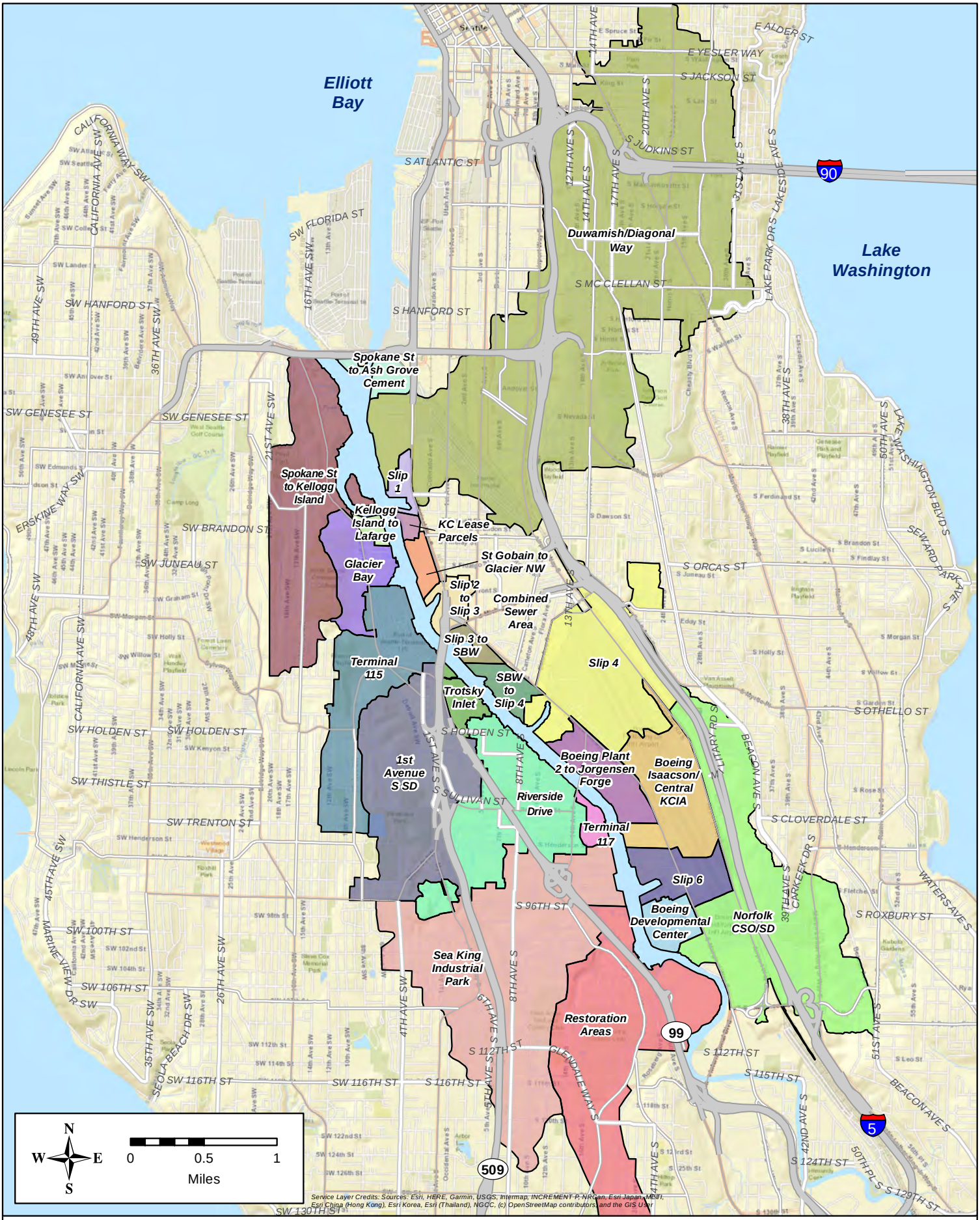

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Figure A-1. Lower Duwamish Waterway Source Control Areas

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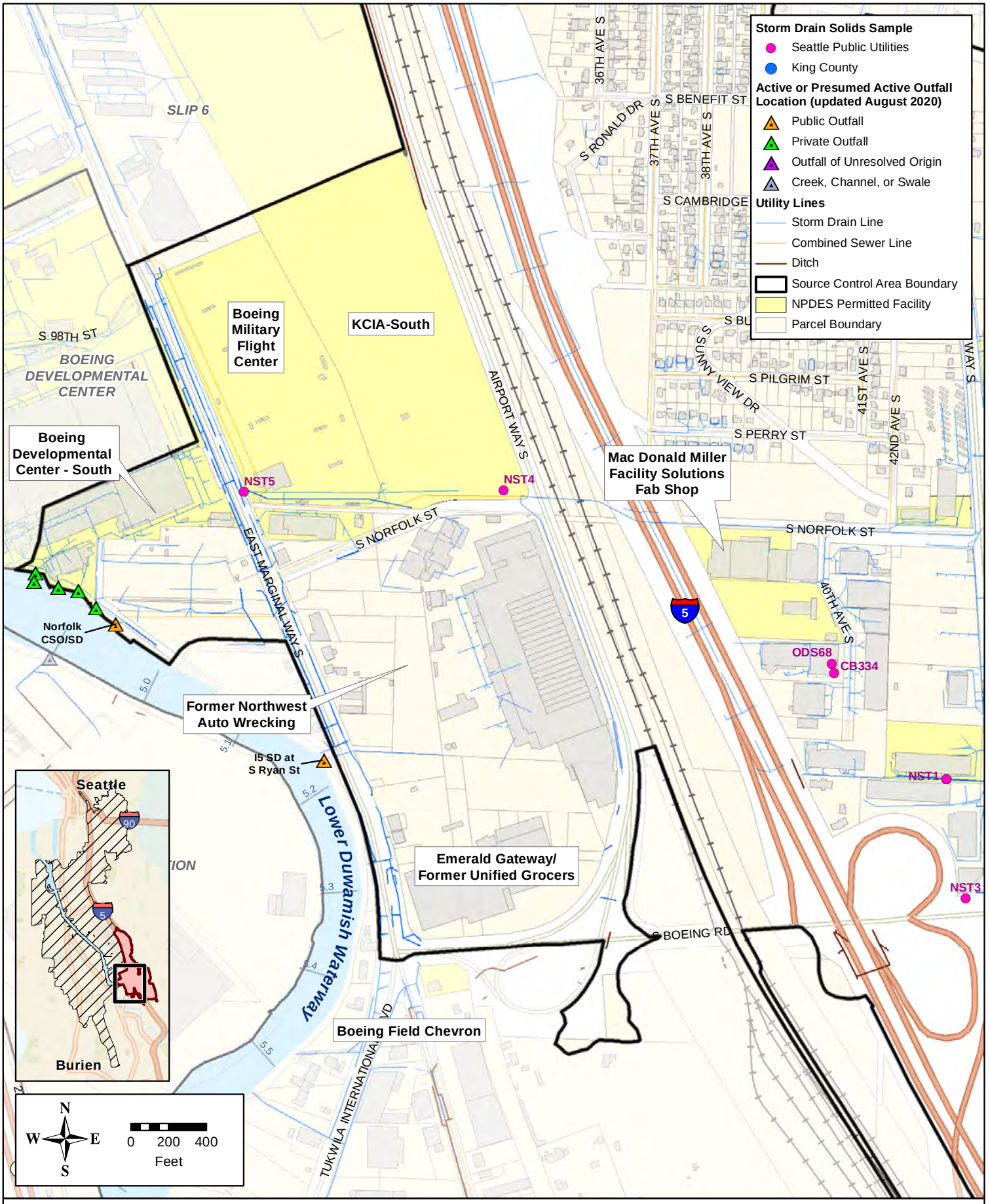

Figure A-2. RM 4.9 East
(EEA-7: Norfolk CSO/Storm Drain)
Source Control Area

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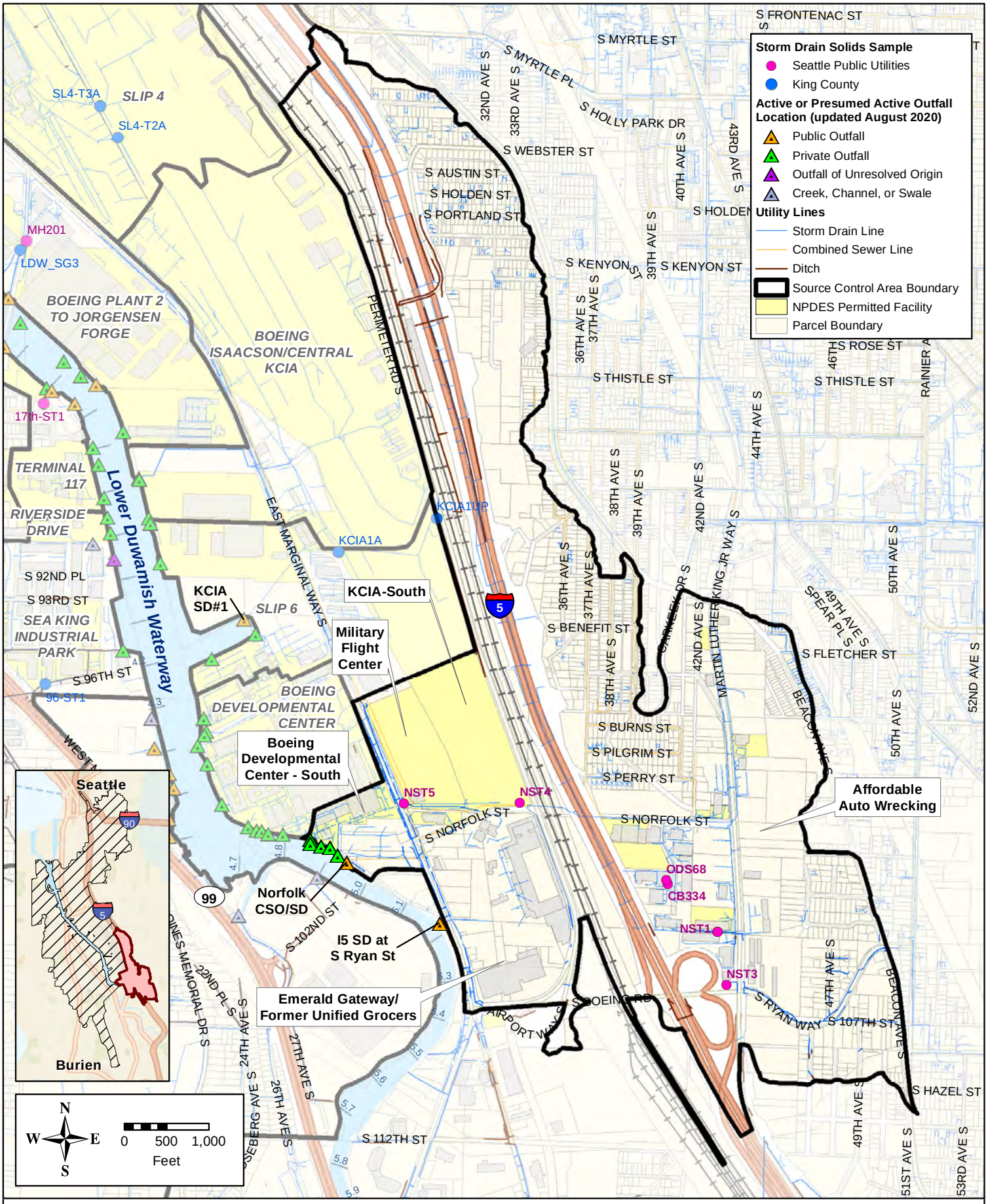

Figure A-3. RM 4.9 East
(EEA-7: Norfolk CSO/Storm Drain)
Norfolk Basin

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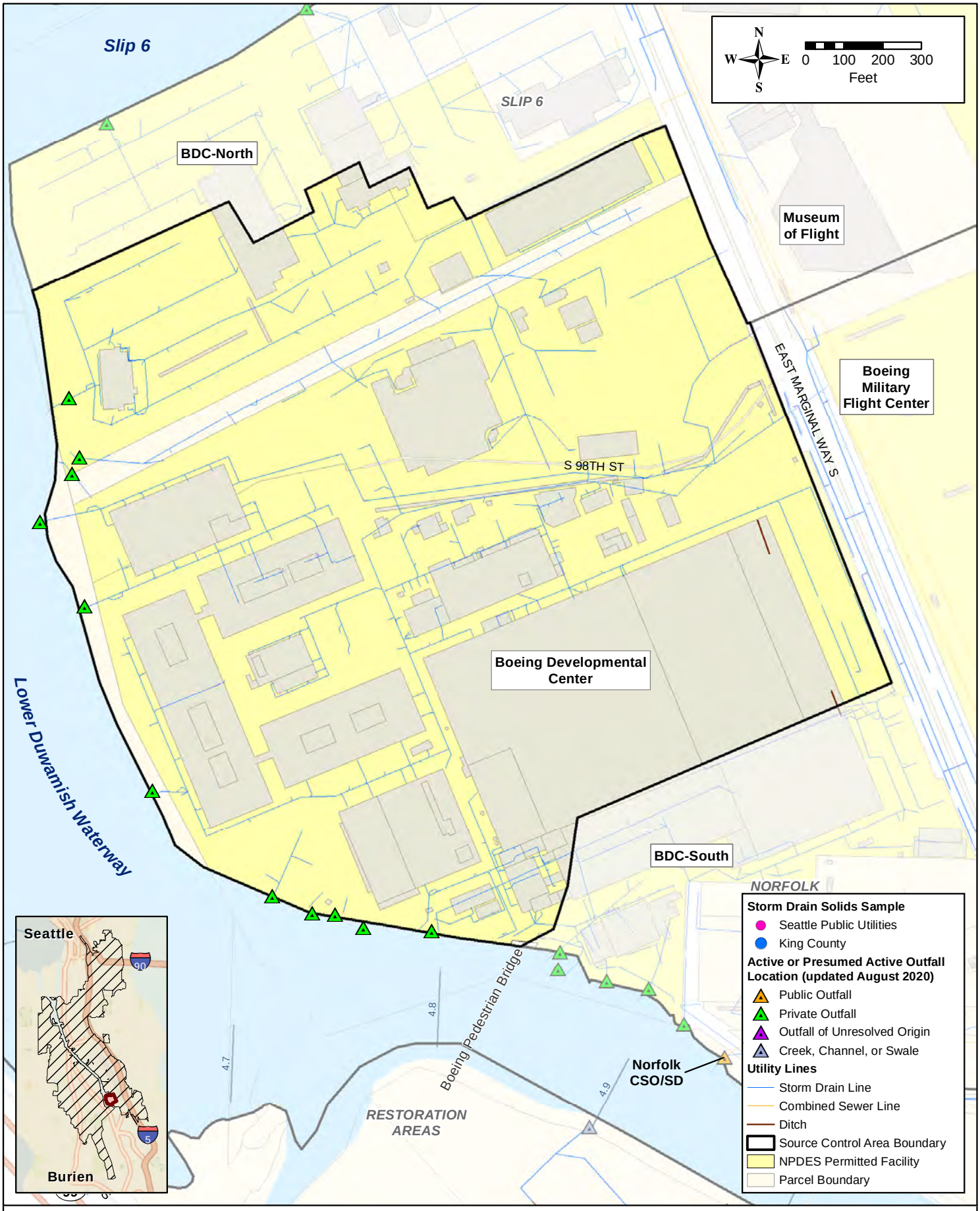

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Figure A-4. RM 4.3-4.9 East (Boeing Developmental Center) Source Control Area

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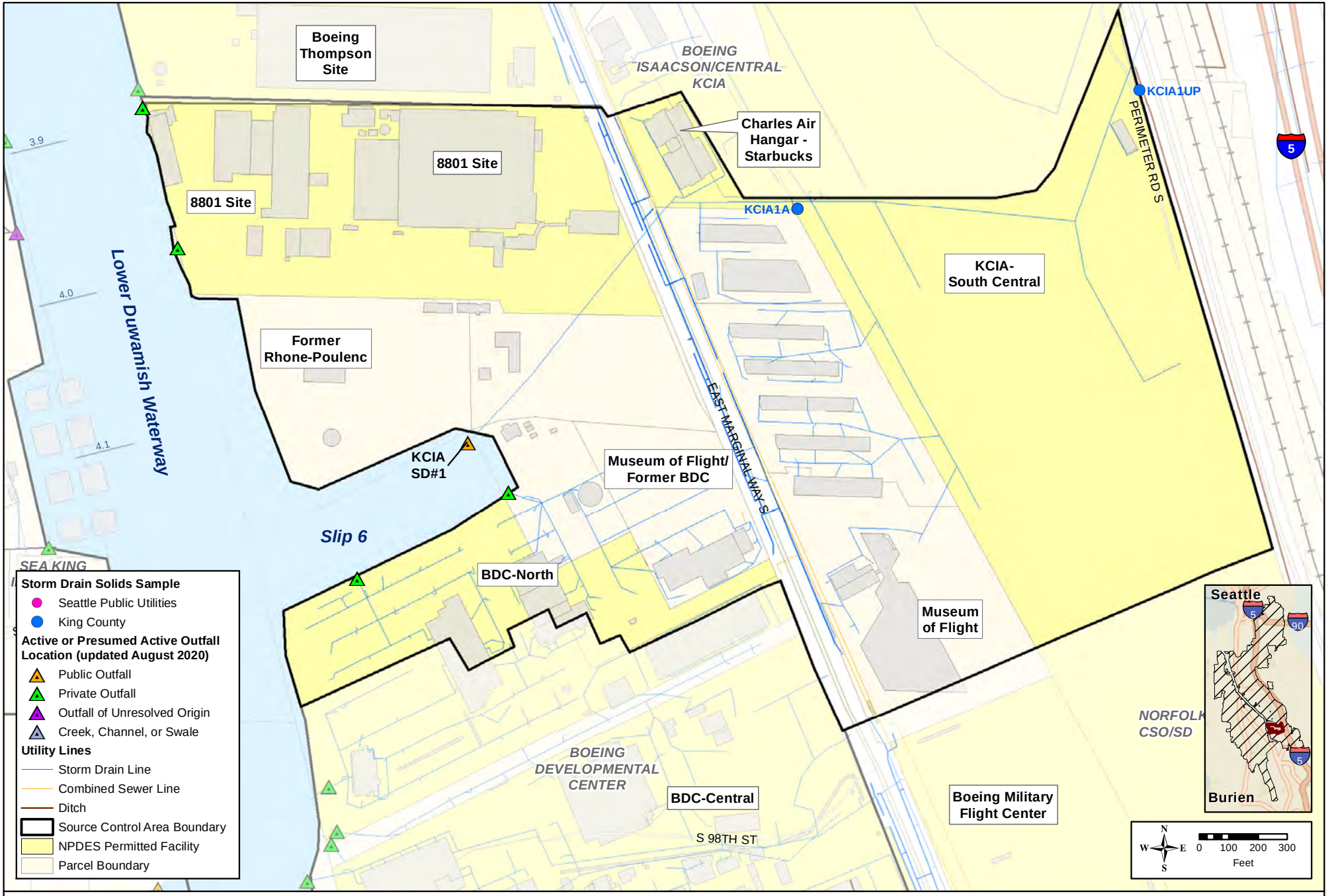

Figure A-5. RM 3.9-4.3 East (Slip 6) Source Control Area

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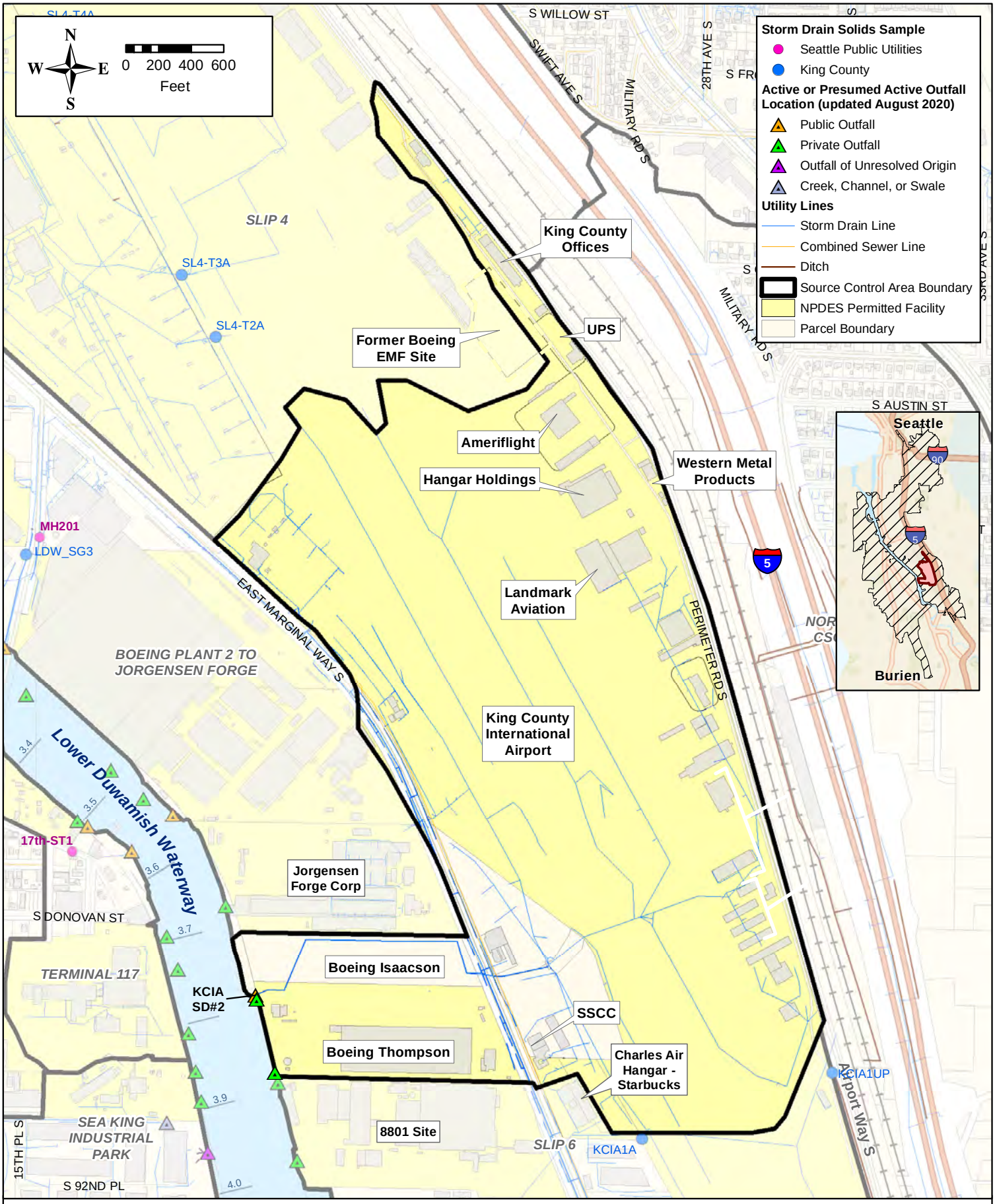

Figure A-6. RM 3.7-3.9 East
(EAA-6: Boeing Isaacson/Central KCIA)
Source Control Area

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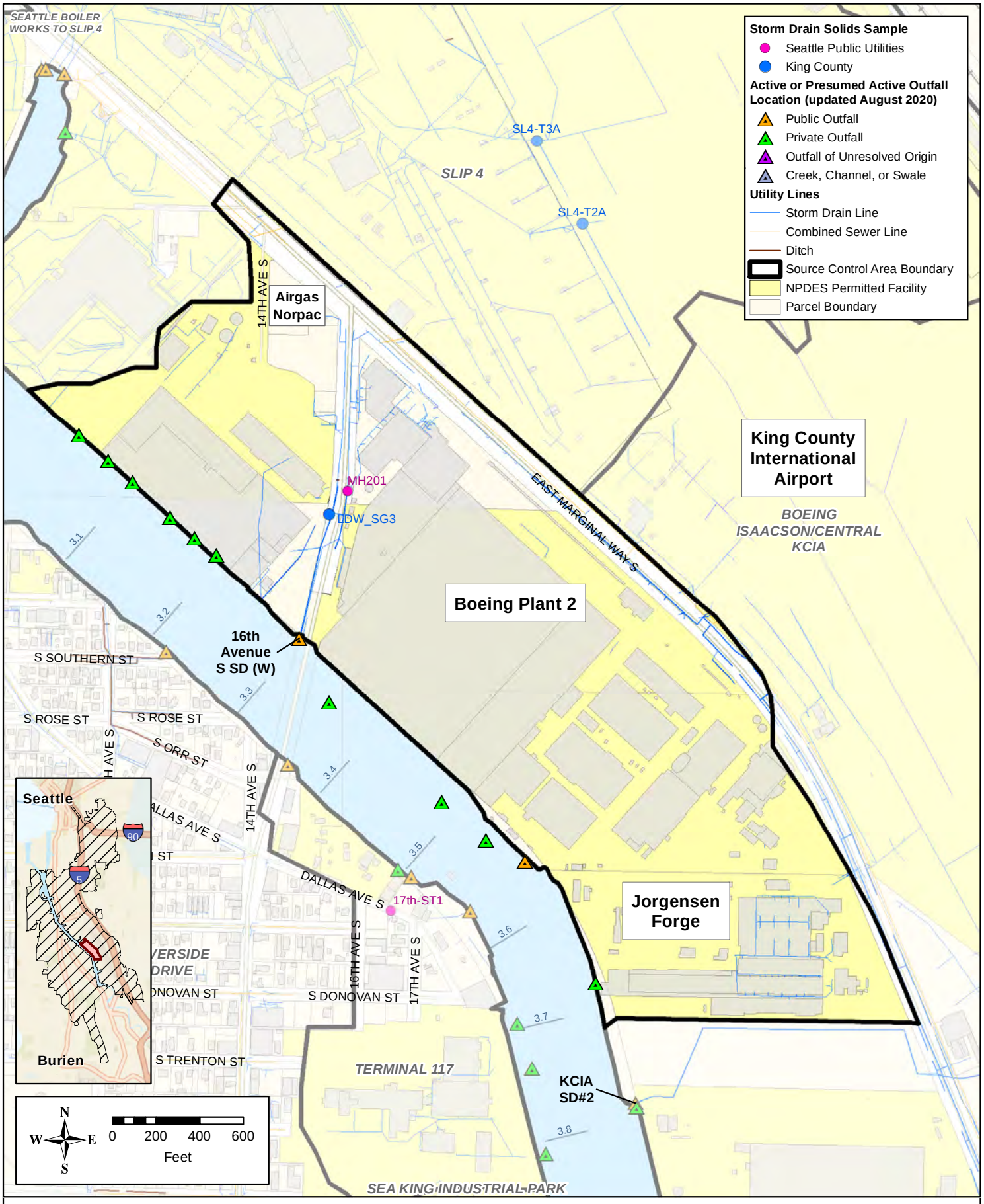

Figure A-7. RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge) Source Control Area

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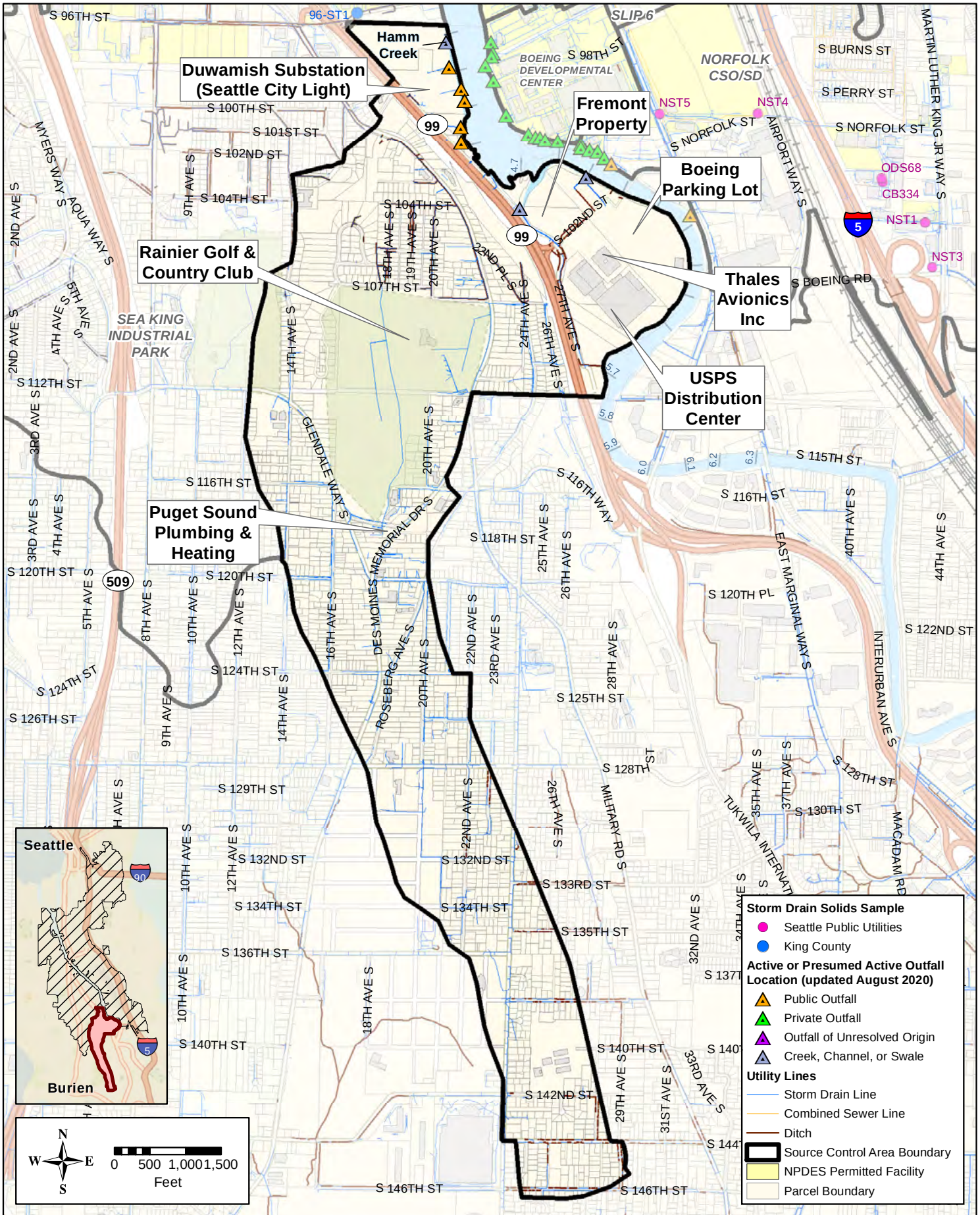

Figure A-8. RM 4.2-5.8 West (Restoration Areas) Source Control Area

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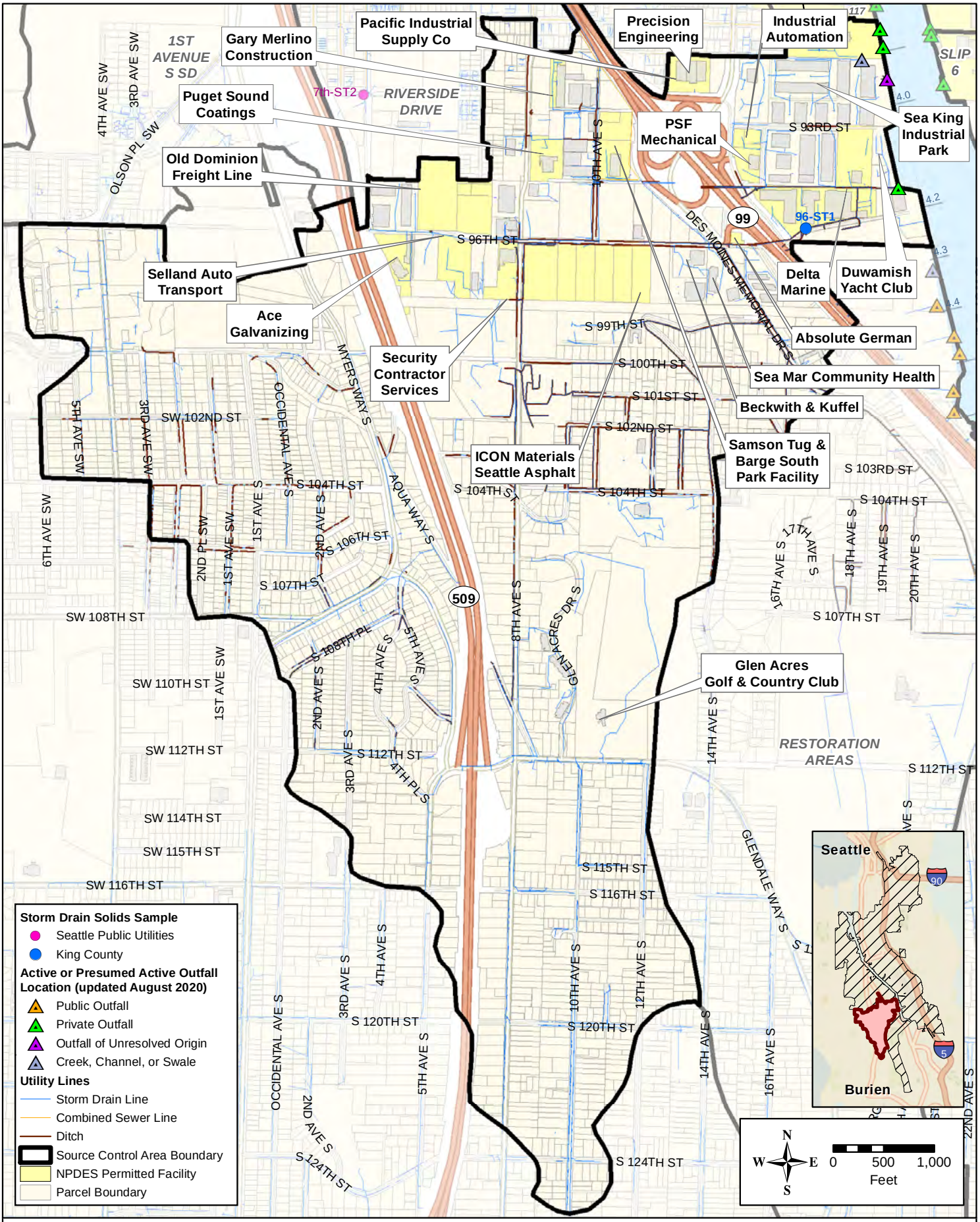

Figure A-9. RM 3.8-4.2 West (Sea King Industrial Park) Source Control Area

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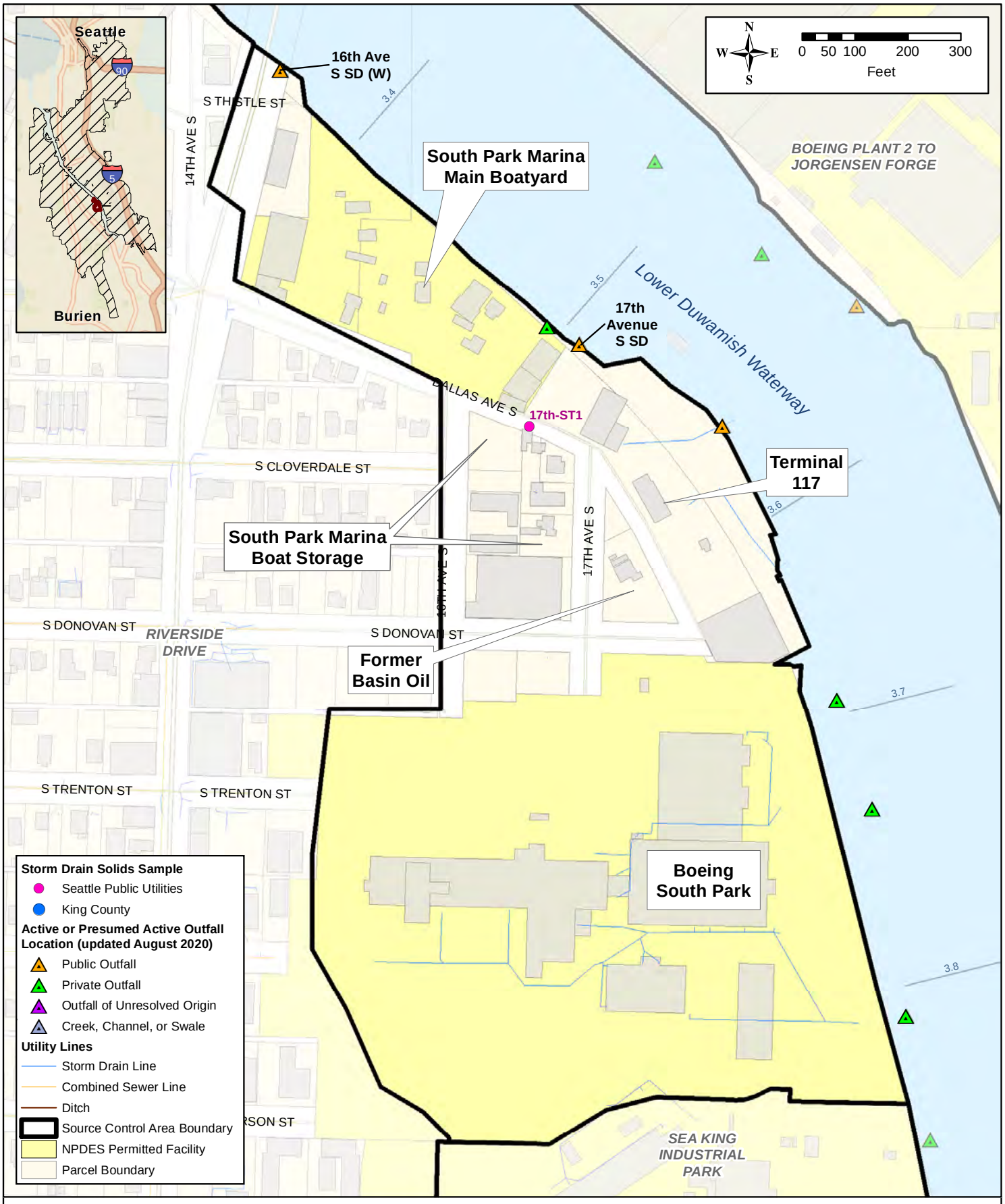

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Figure A-10. RM 3.4-3.8 West
(EAA-5: Terminal 117)
Source Control Area

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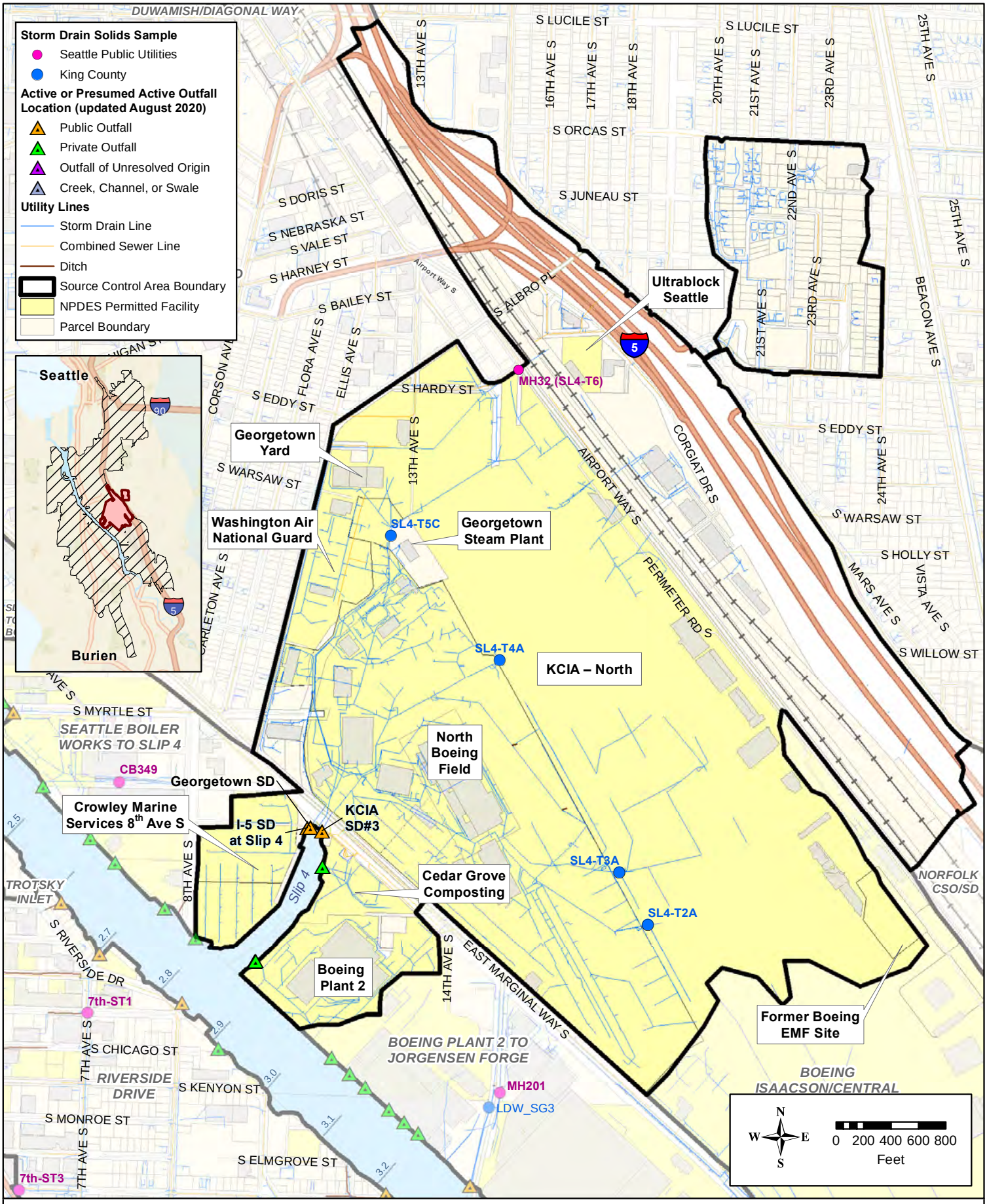

Figure A-11. RM 2.8 East (EAA-3: Slip 4) Source Control Area

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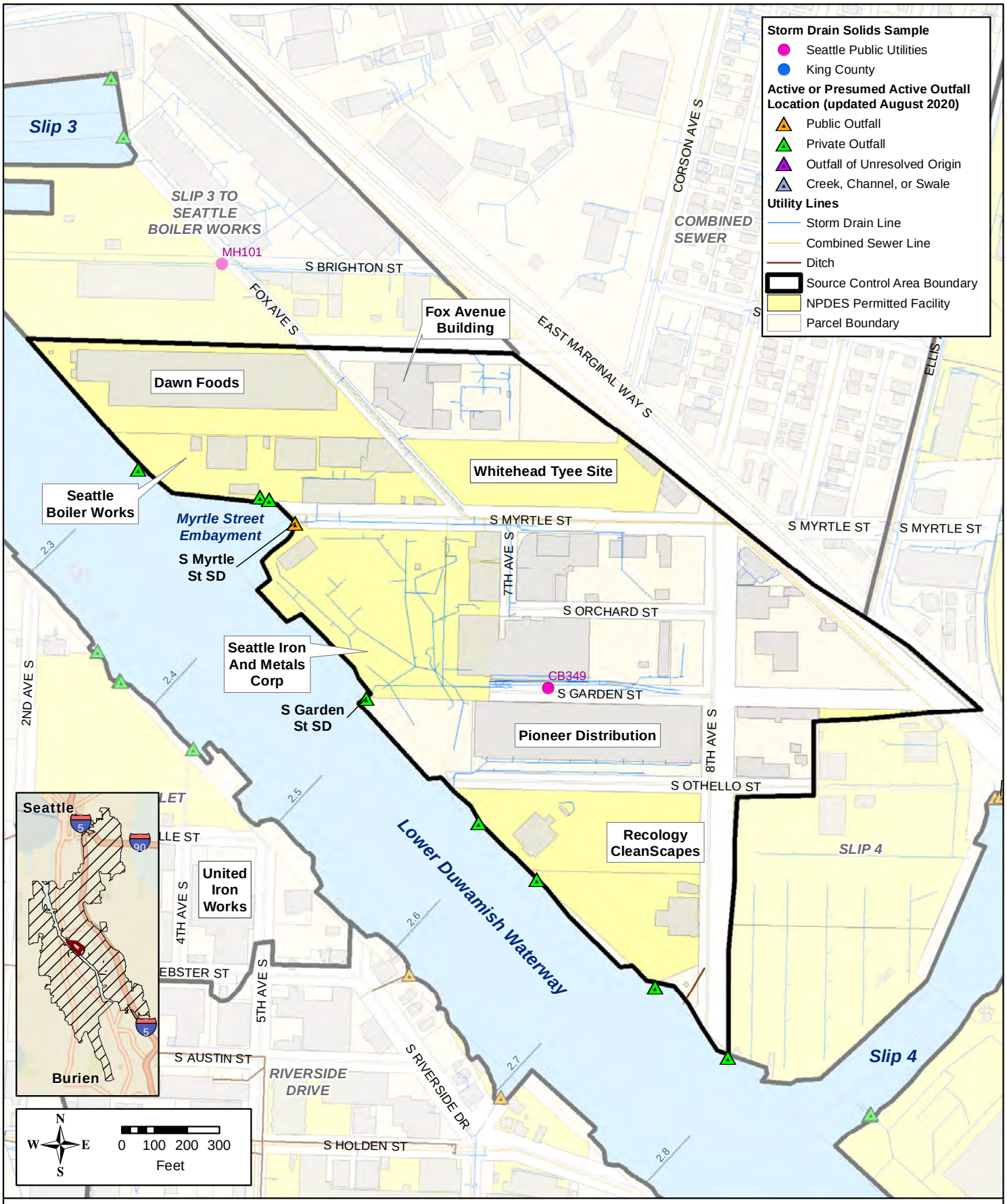

Figure A-12. RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) Source Control Area

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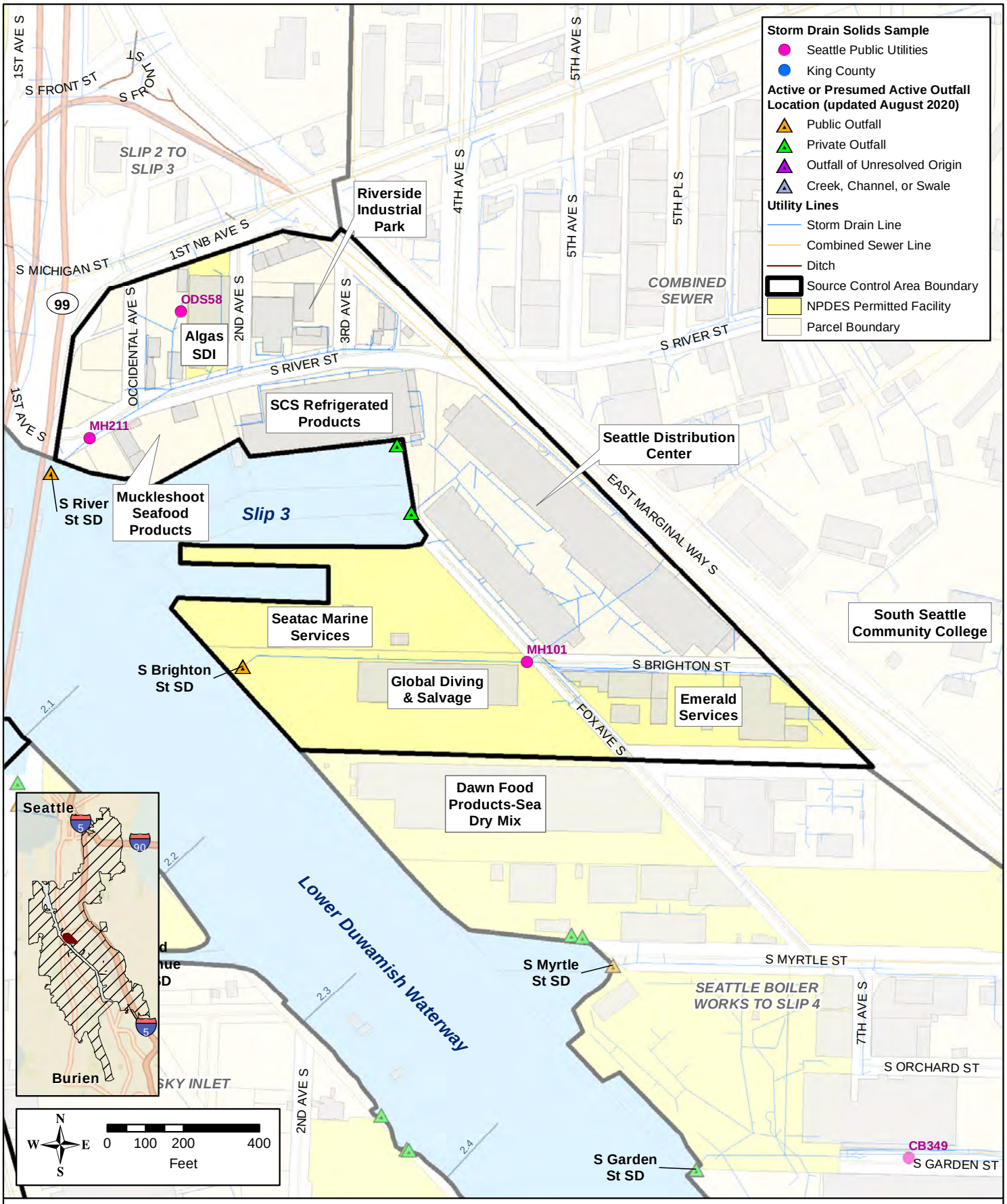

Figure A-13. RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) Source Control Area

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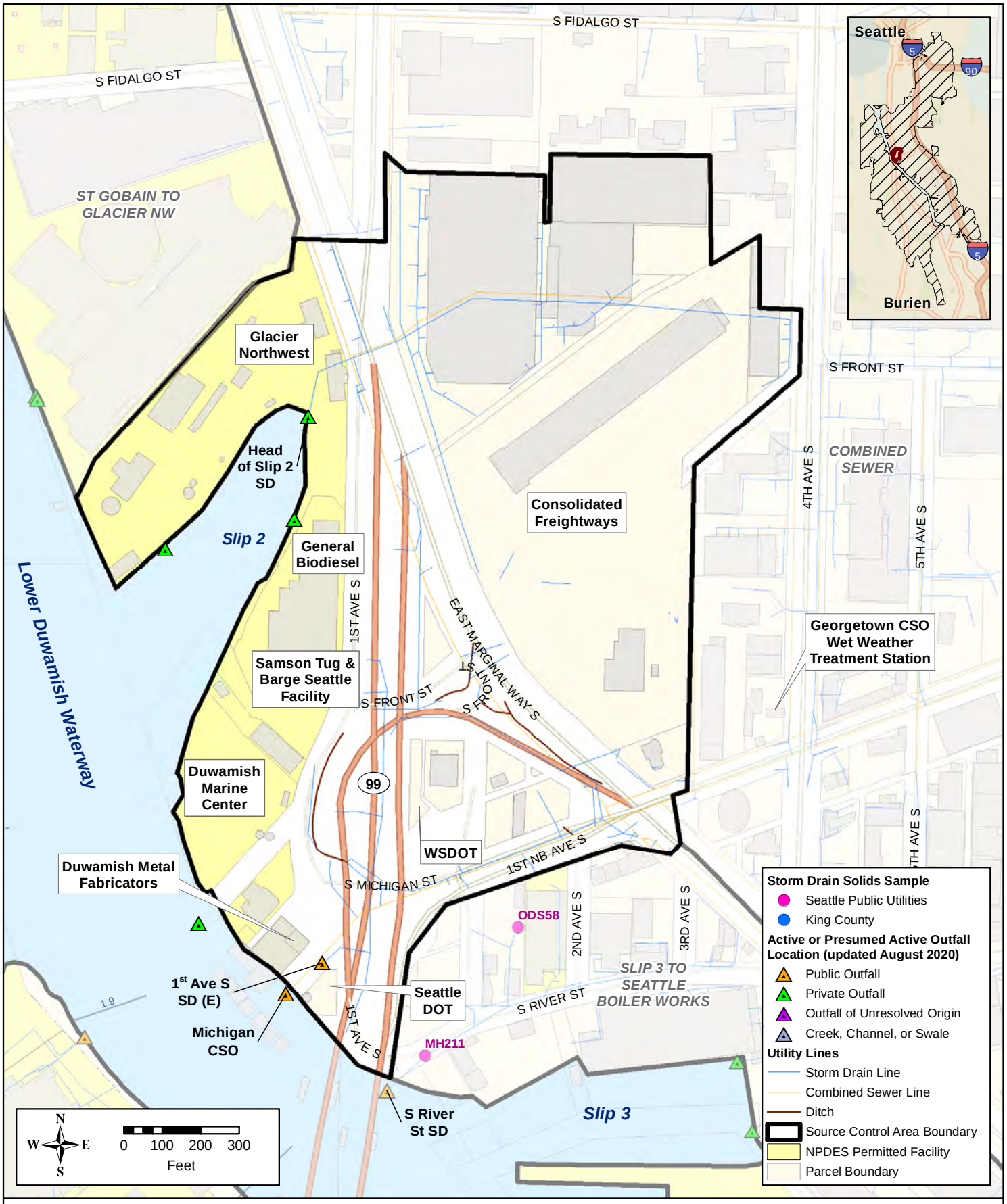

Figure A-14. RM 1.7-2.0 East (Slip 2 to Slip 3) Source Control Area

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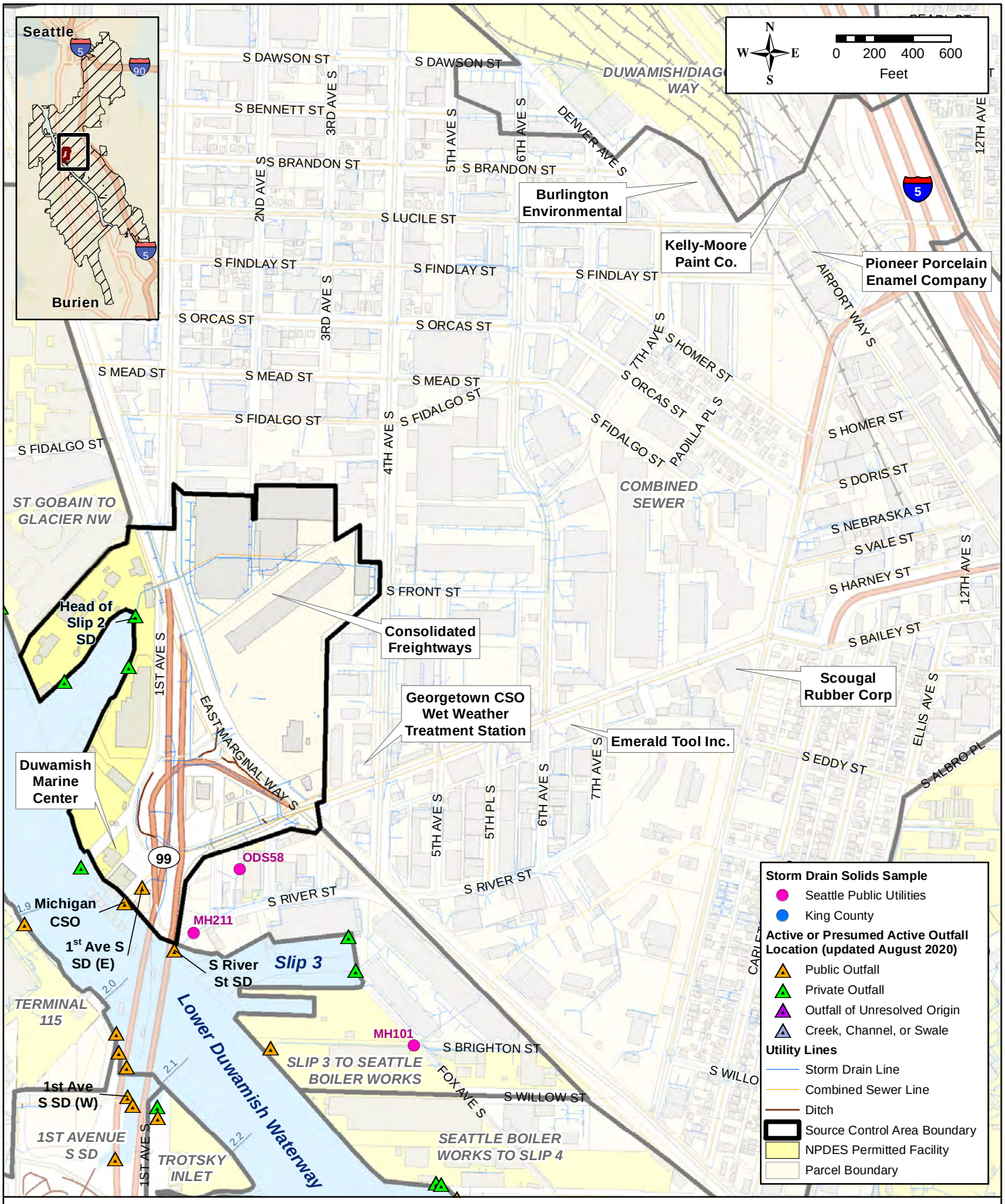

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Figure A-15. RM 1.7-2.0 East (Slip 2 to Slip 3) Michigan Street CSO Basin

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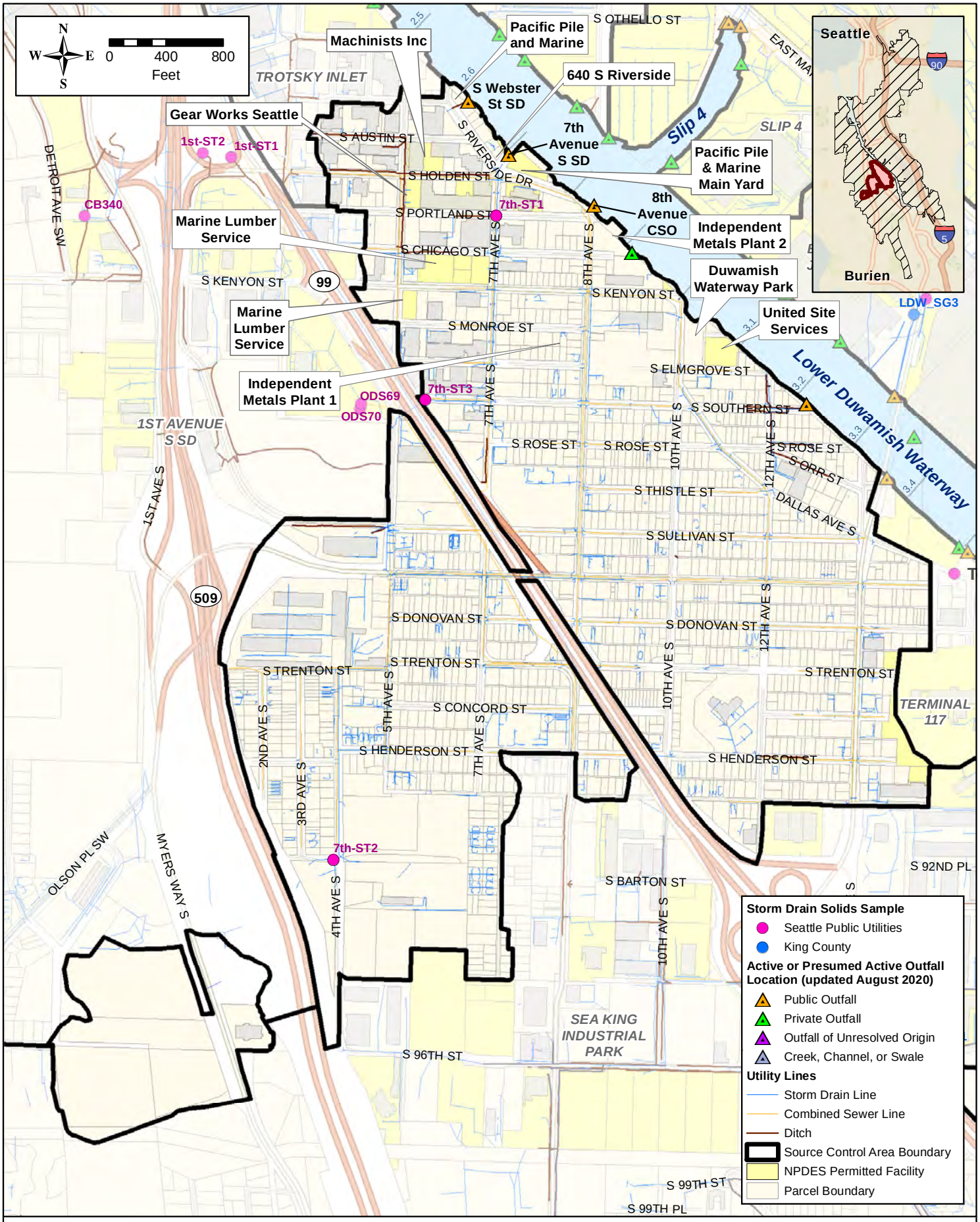

Figure A-16. RM 2.2-3.4 West (Riverside Drive) Source Control Area

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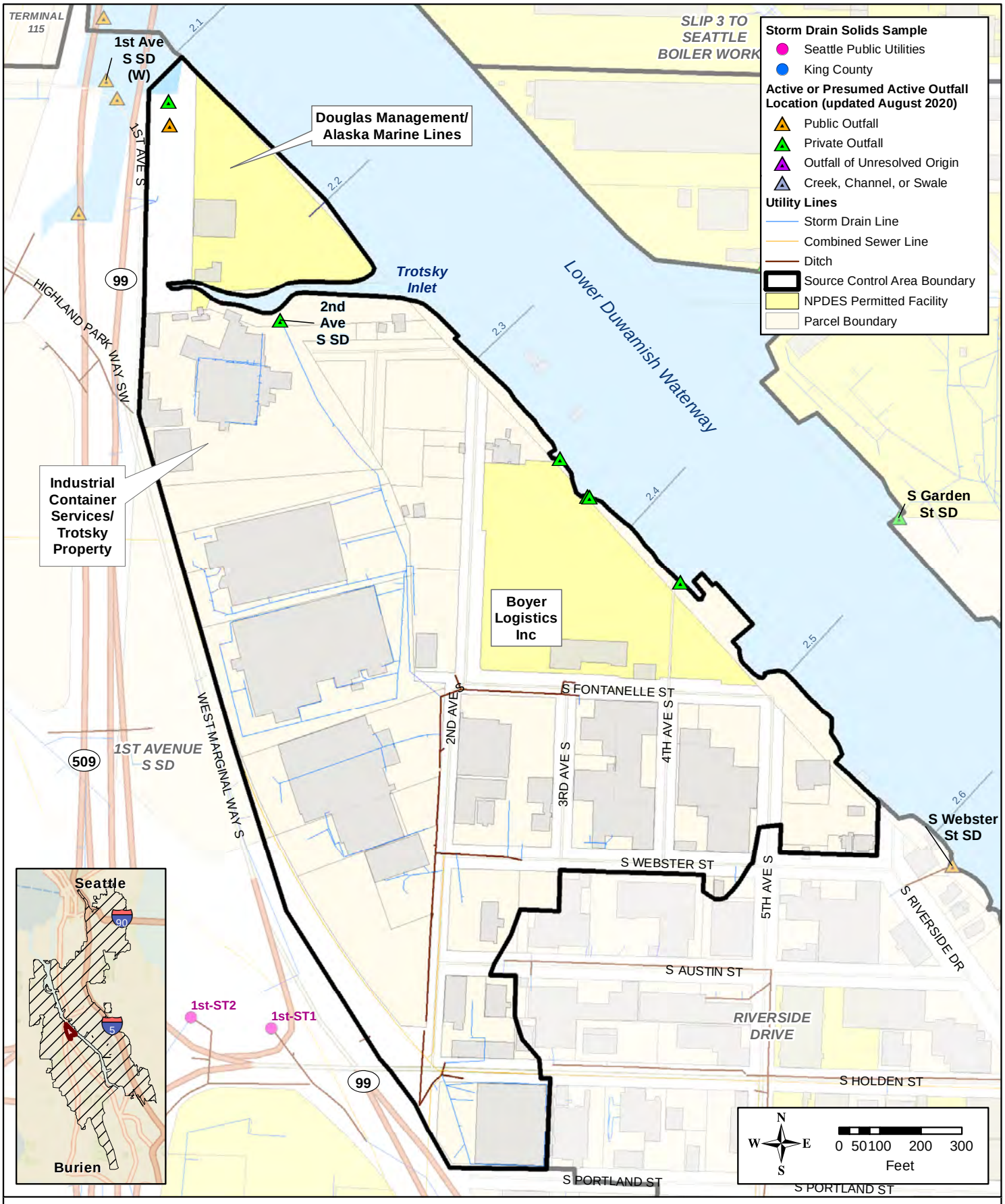

Figure A-17. RM 2.1-2.2 West (EAA-2: Trotsky Inlet) Source Control Area

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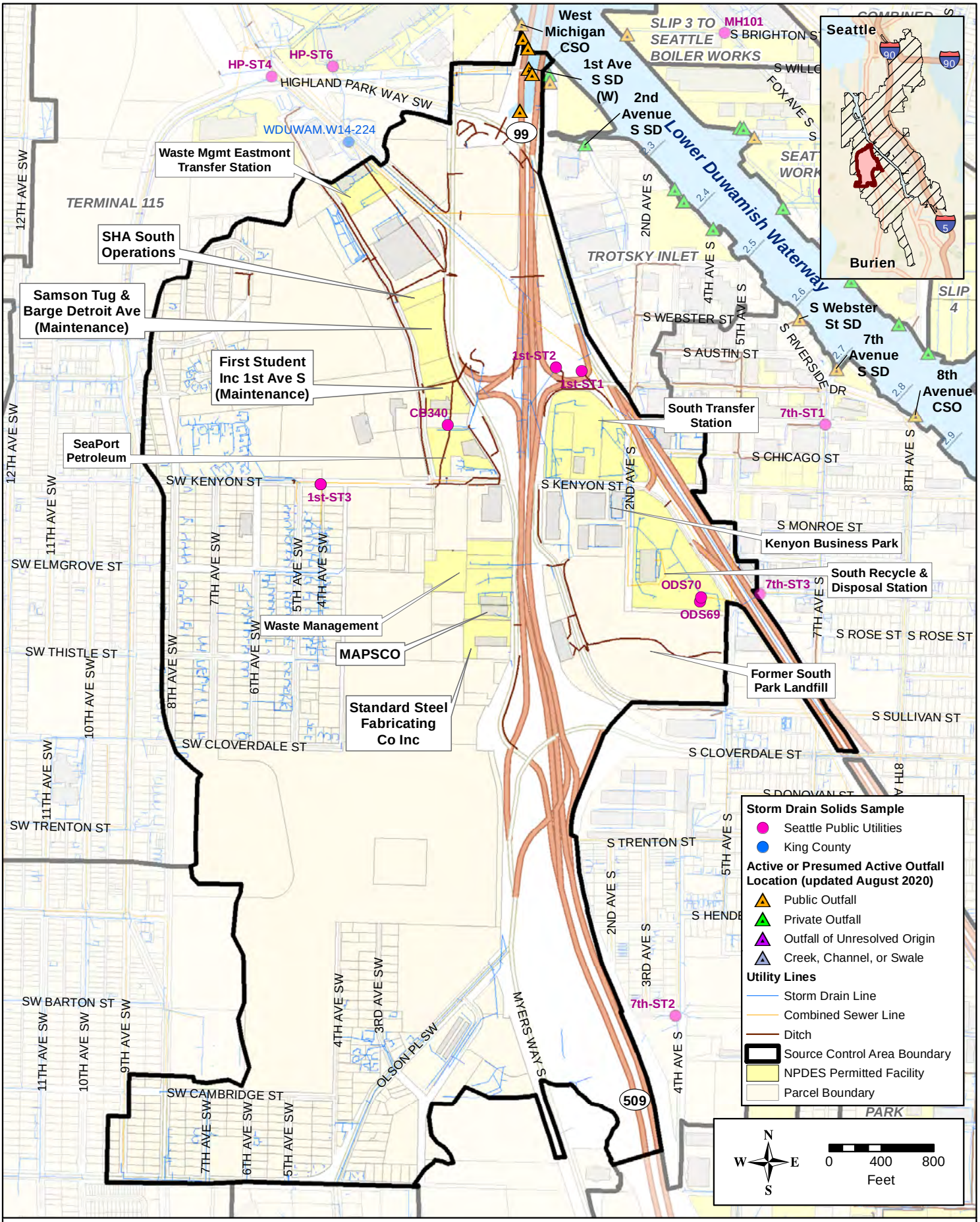

Figure A-18. RM 2.1 West (1st Avenue South Storm Drain) Source Control Area

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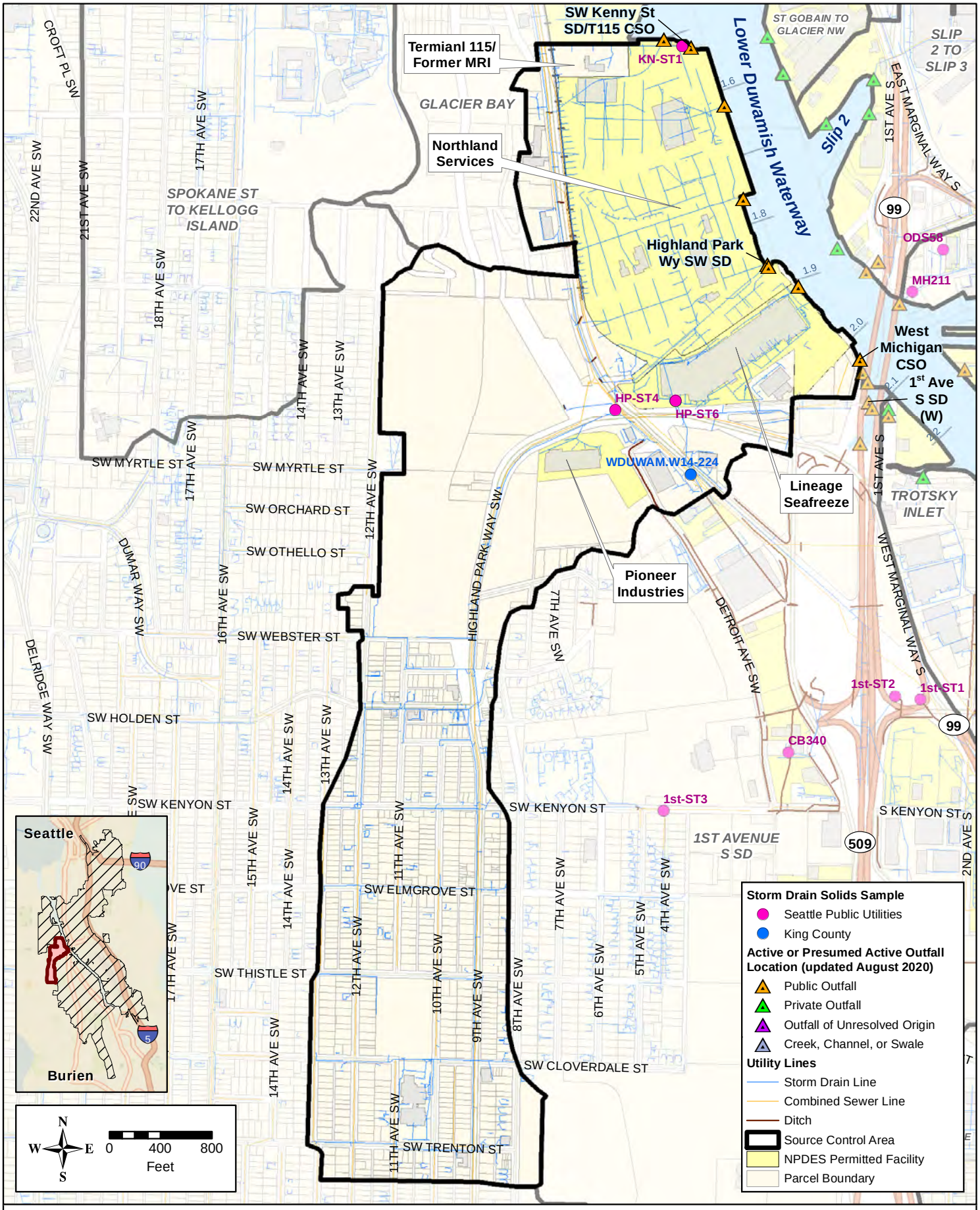

Figure A-19. RM 1.6-2.1 West (Terminal 115) Source Control Area

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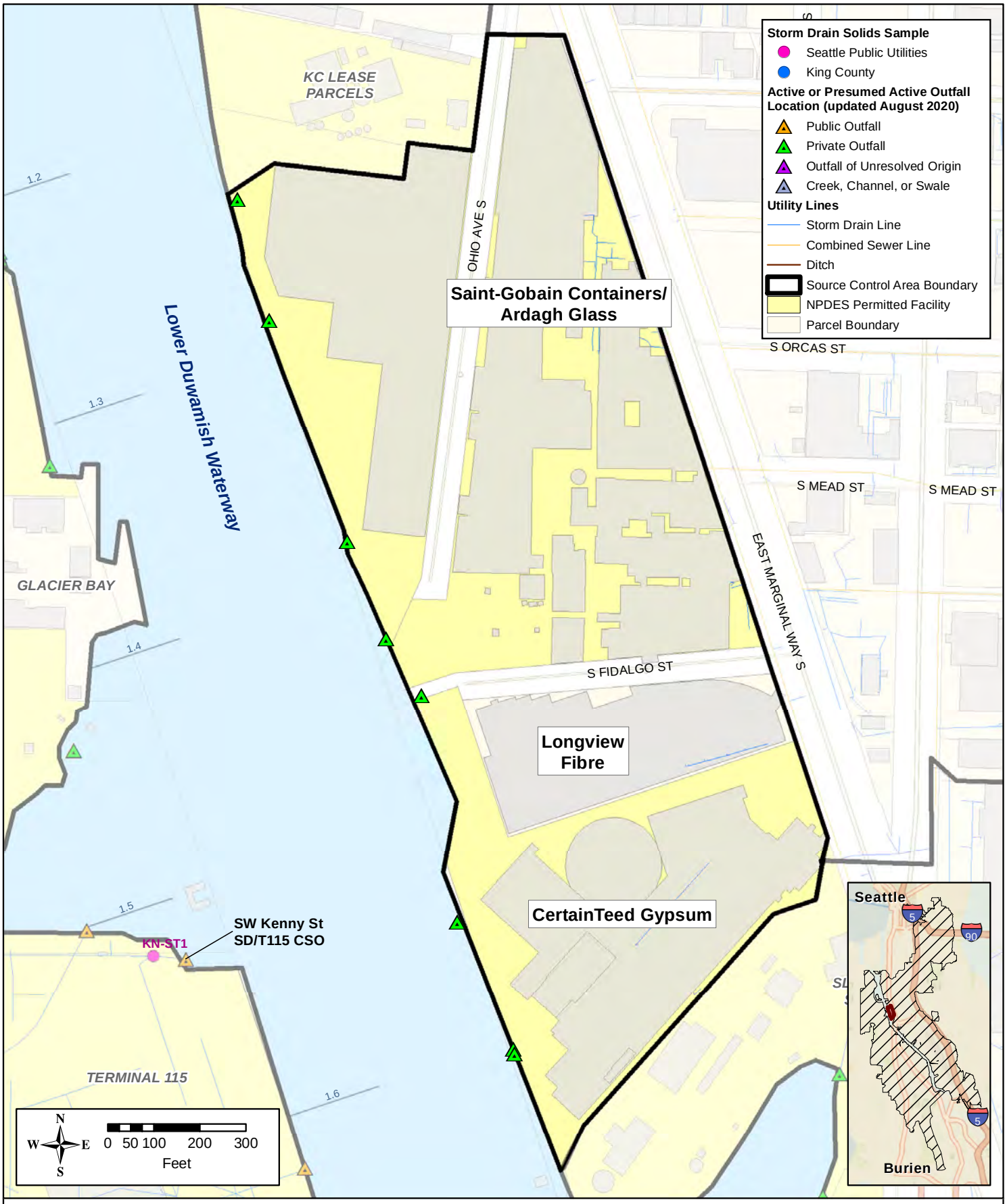

Figure A-20. RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) Source Control Area

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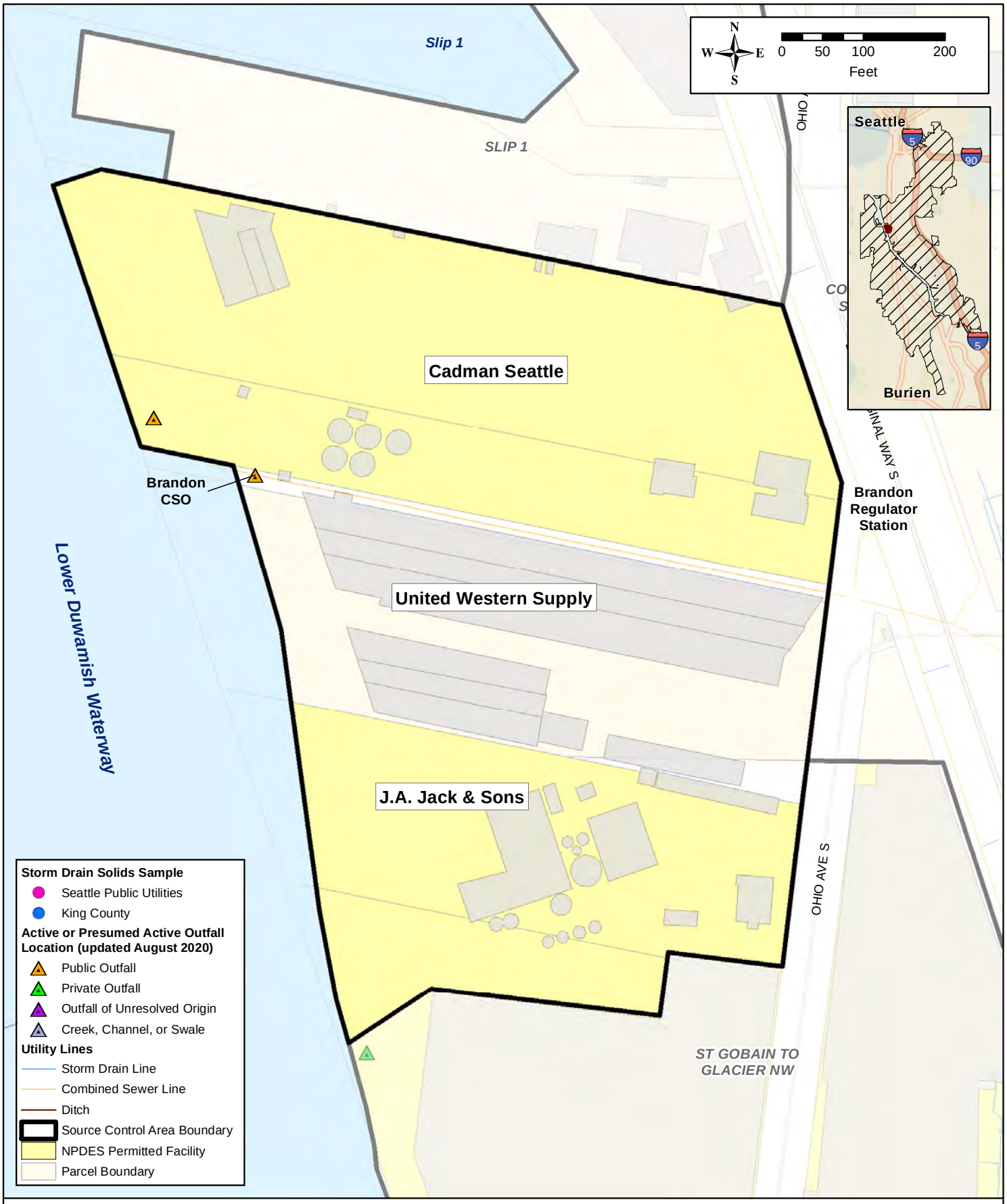

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Figure A-21. RM 1.0-1.2 East (King County Lease Parcels) Source Control Area

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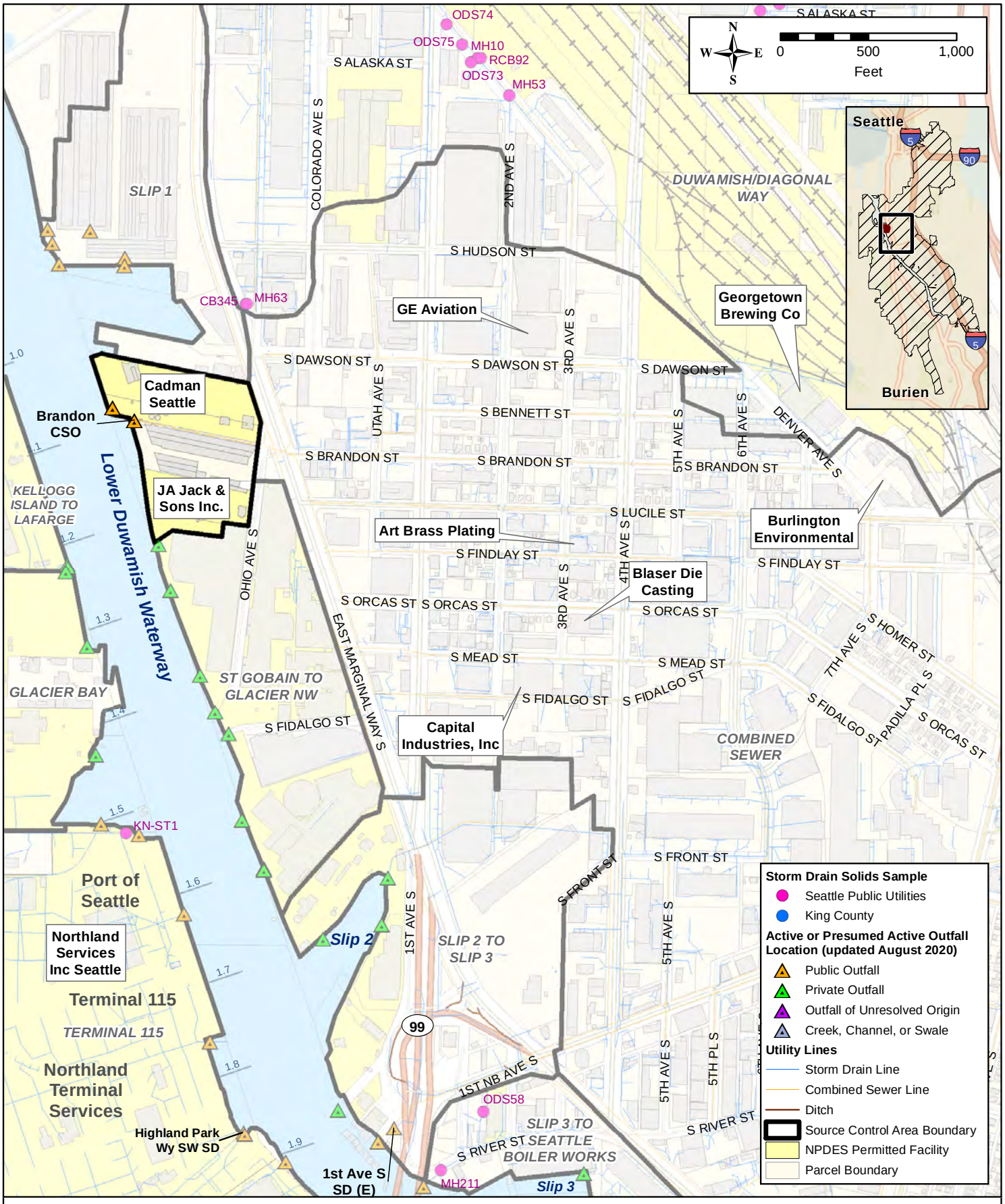

Figure A-22. RM 1.0-1.2 East (King County Lease Parcels) Brandon CSO Basin

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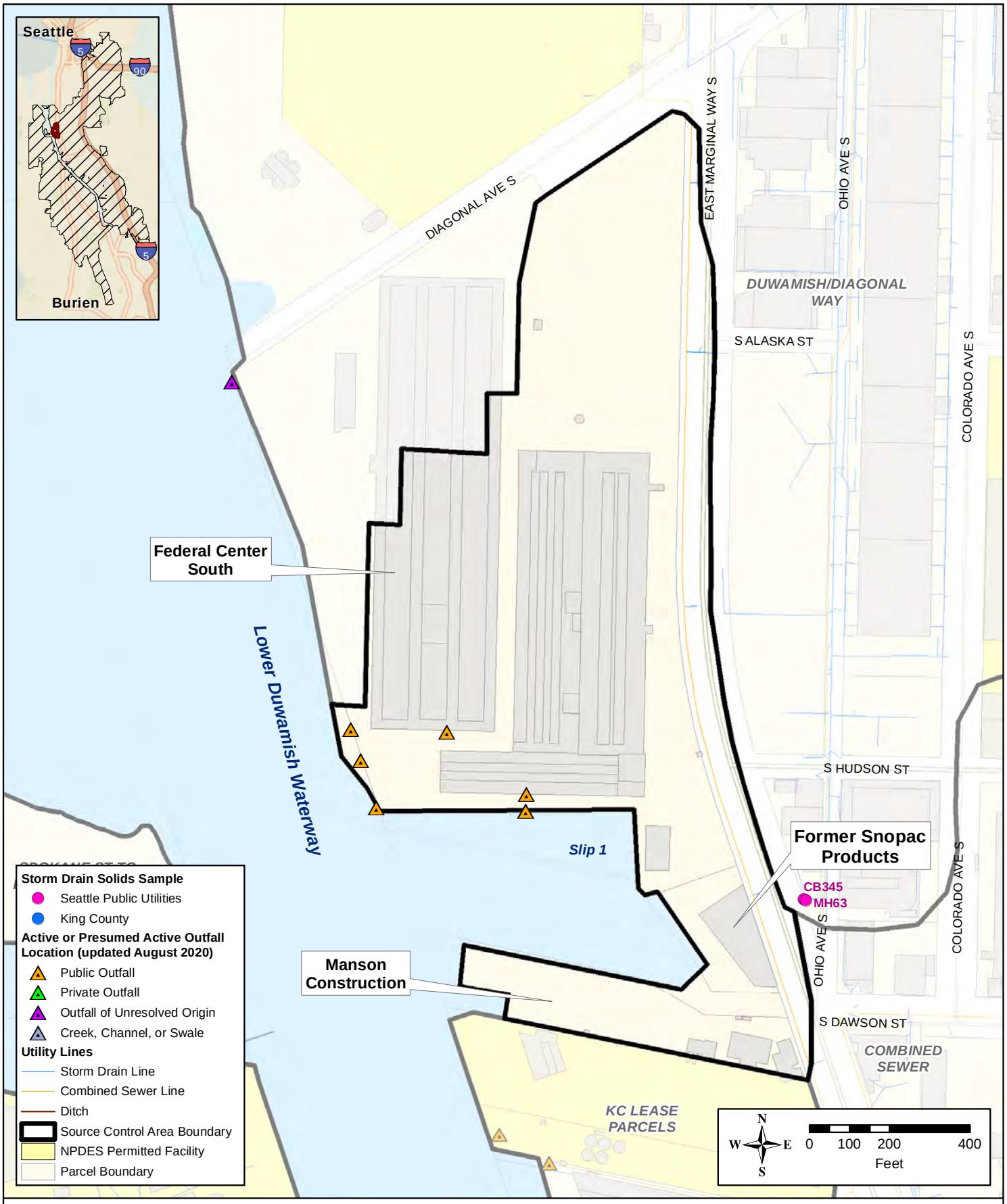

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Figure A-23. RM 0.9-1.0 East (Slip 1) Source Control Area

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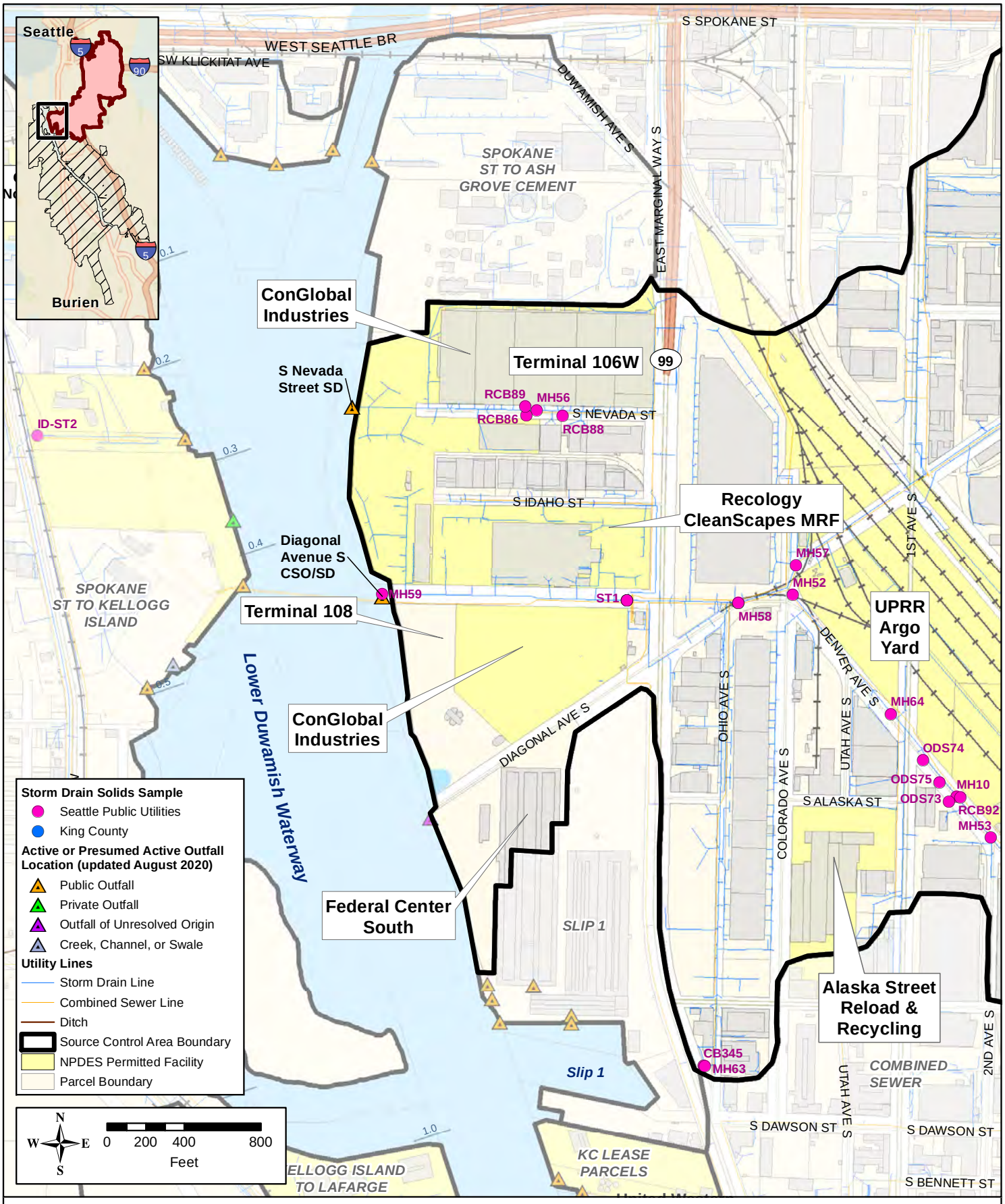

Figure A-24. RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) Source Control Area

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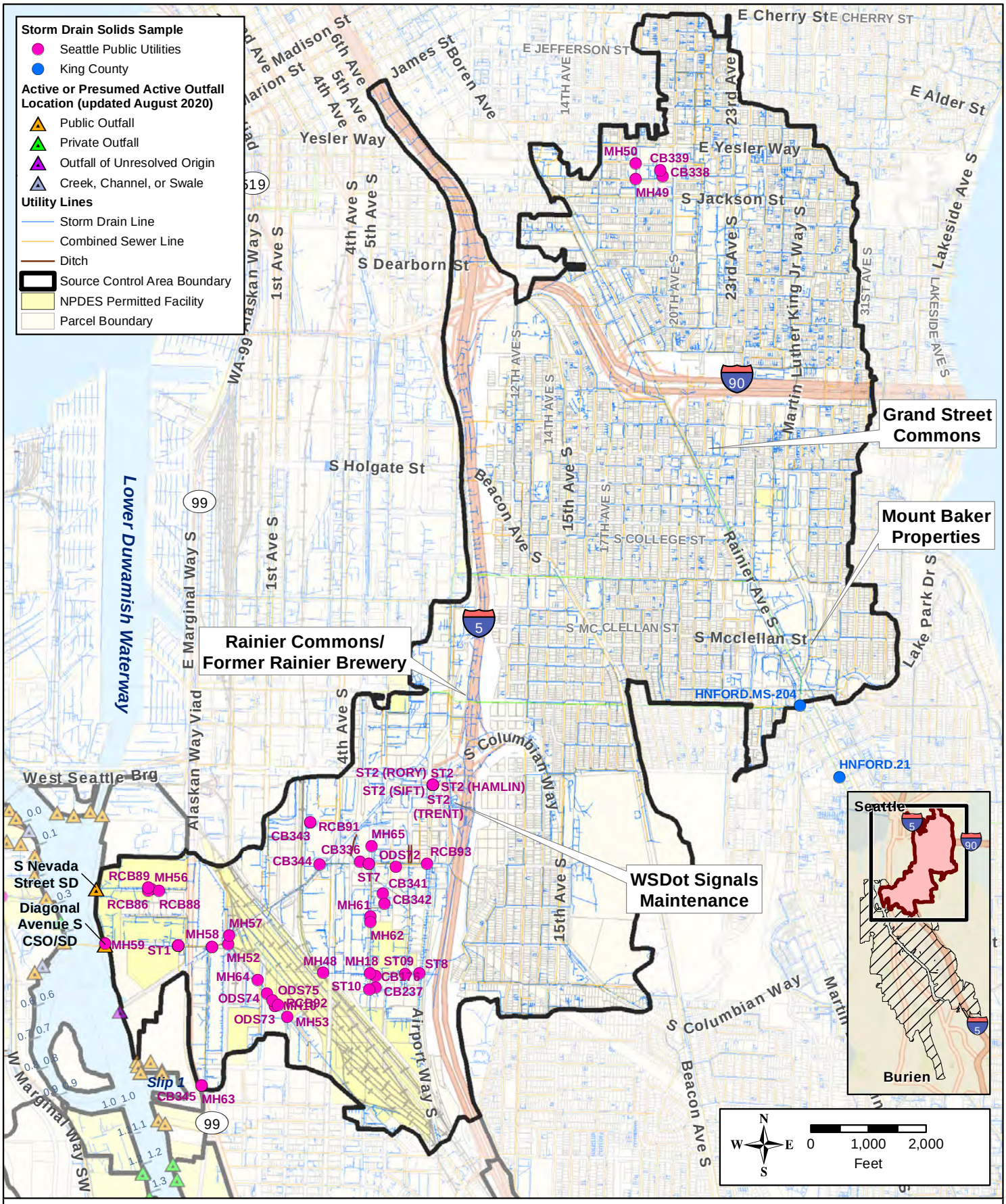

Figure A-25. RM 0.1-0.9 East
(EAA-1: Duwamish/Diagonal Way)
Diagonal Avenue S Storm Drain Basin

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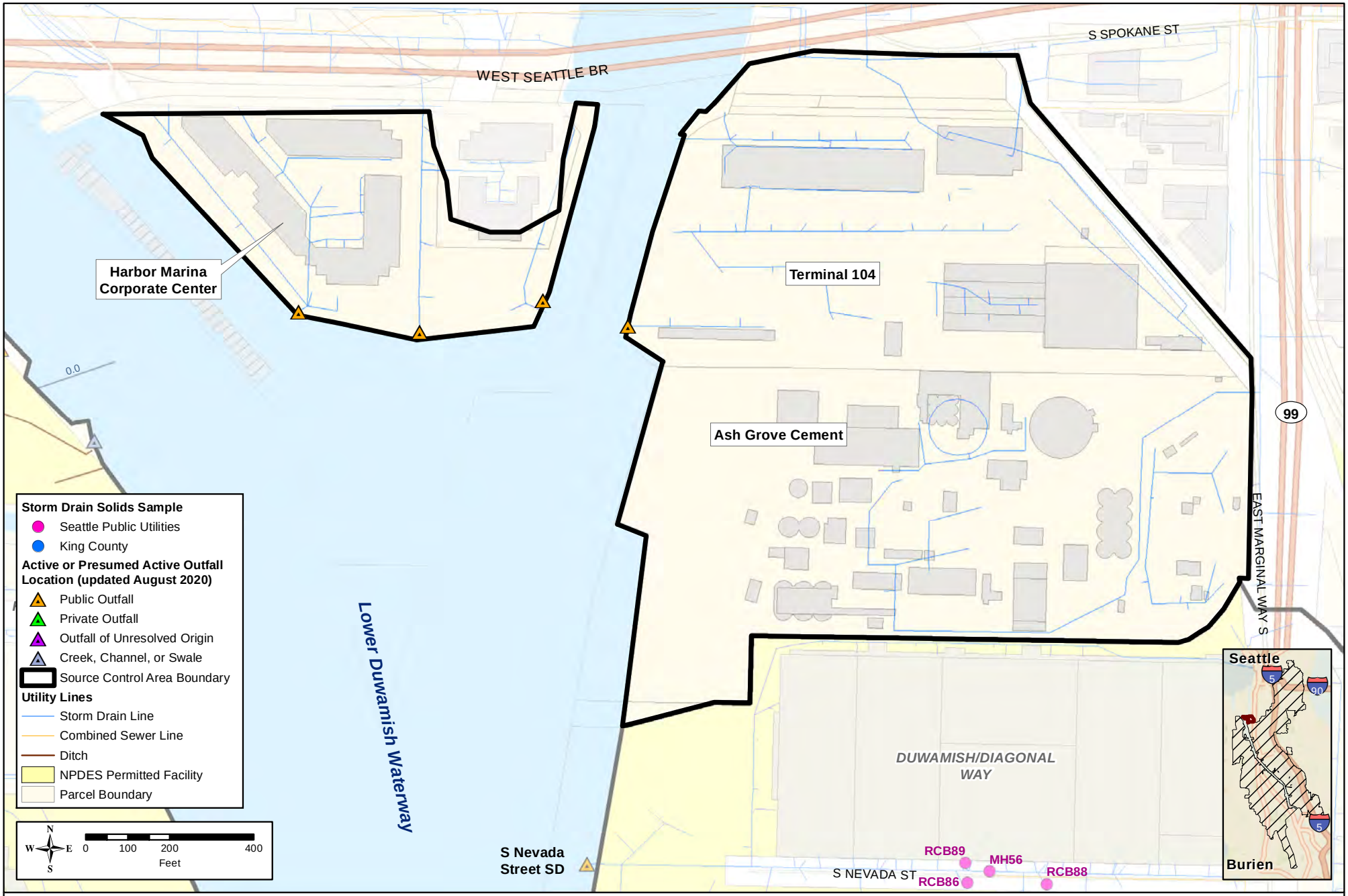

Figure A-26. RM 0.0-0.1 East
(Spokane Street to Ash Grove Cement)
Source Control Area

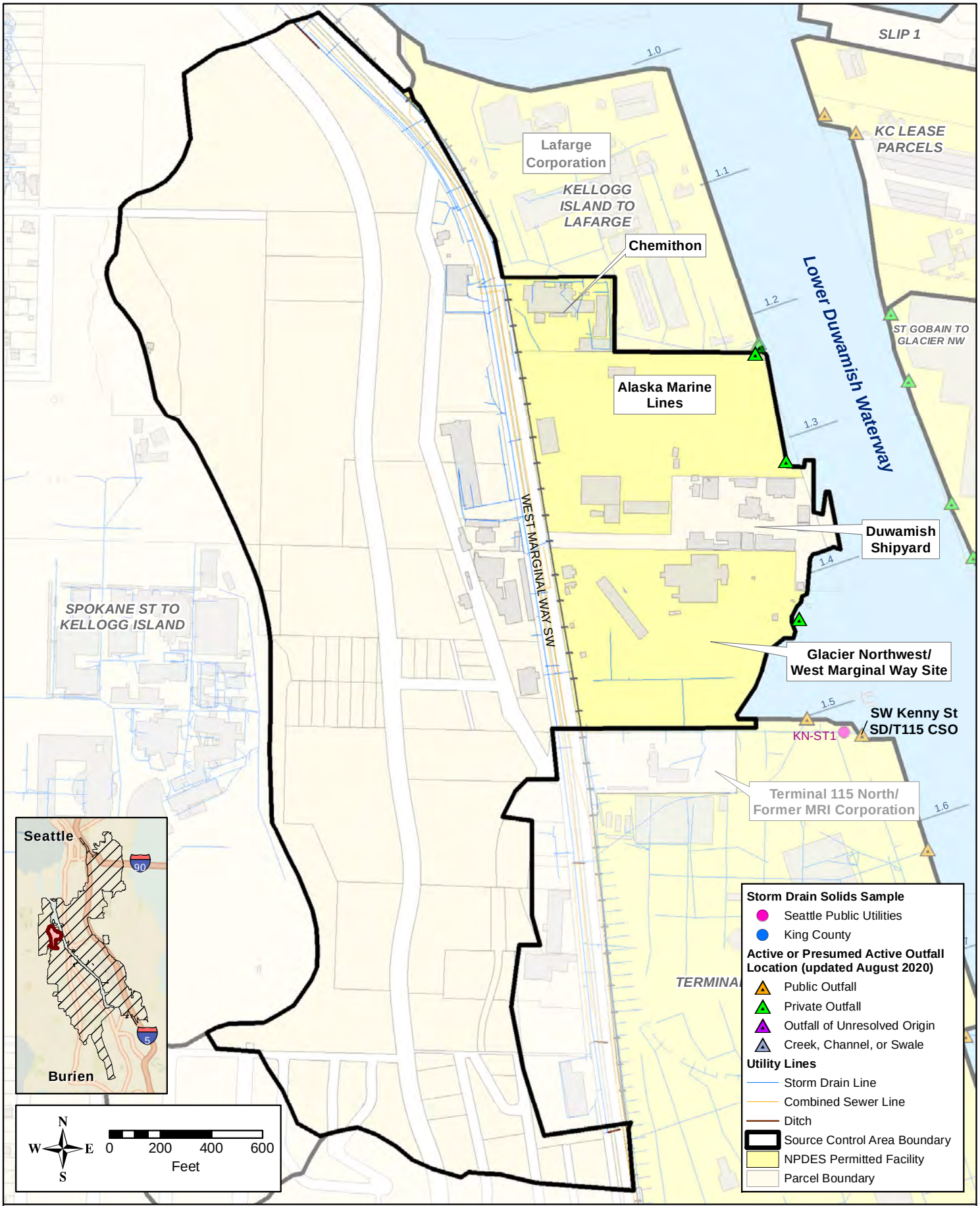

Figure A-27. RM 1.3-1.6 West (Glacier Bay) Source Control Area

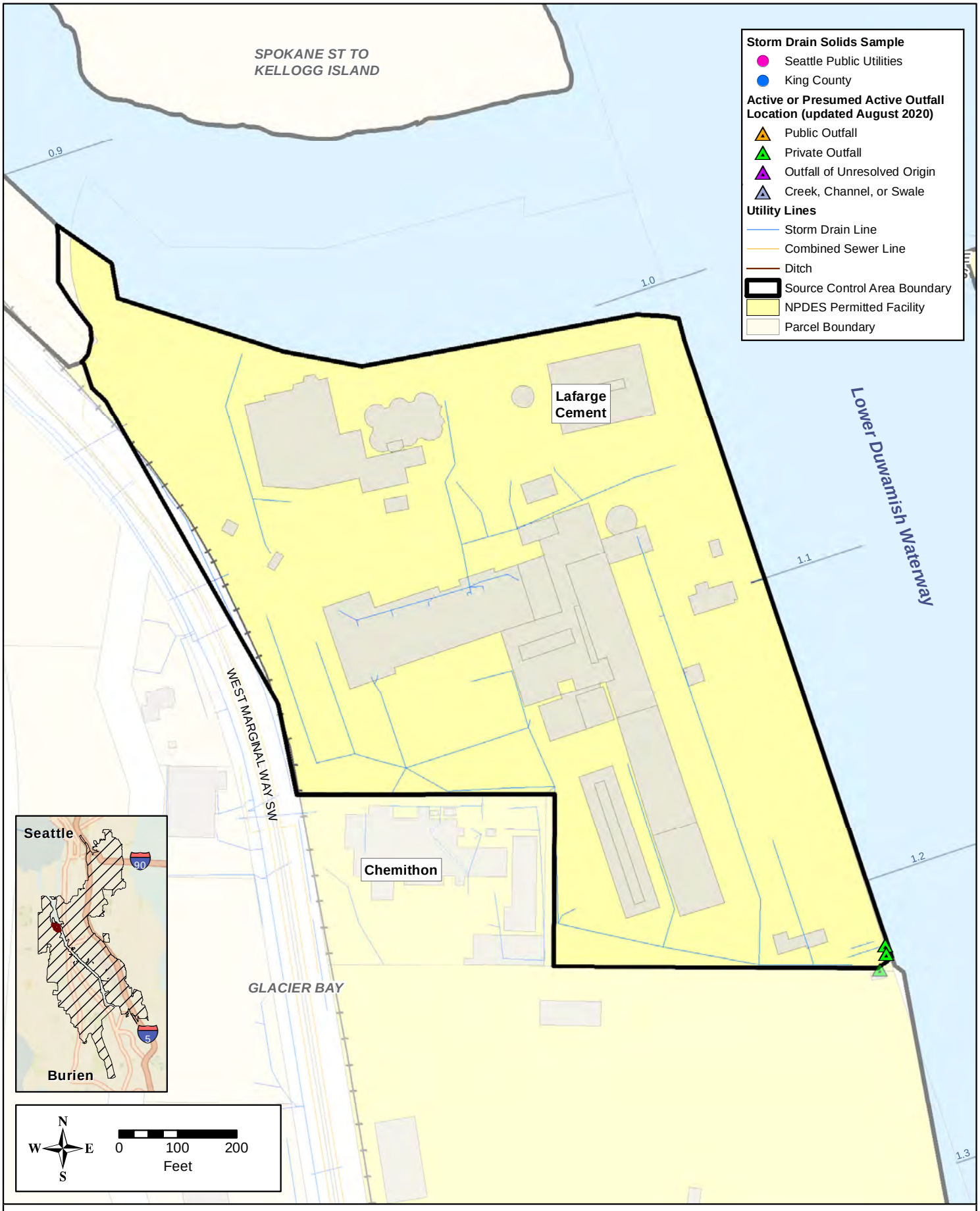

Figure A-28. RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) Source Control Area

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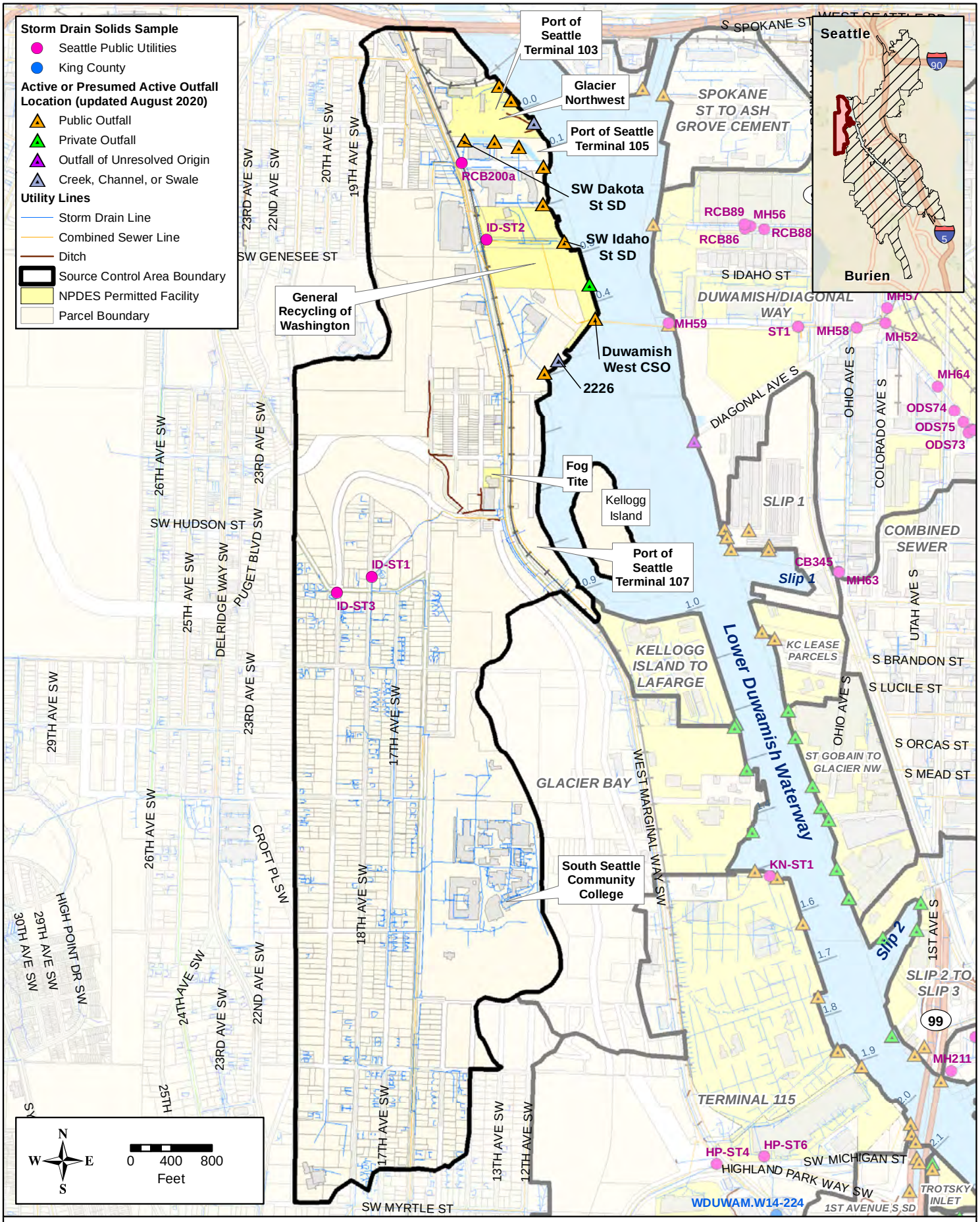

Figure A-29. RM 0.0-1.0 West (Spokane Street to Kellogg Island) Source Control Area

List of Maps

Appendix B:
Action Item Status

Table B-1. Action Items Completed During 2019

Table B-2. Incomplete Action Items

Table B-1. Action Items Completed or Canceled During This Reporting Period

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Date Completed	Comments/Follow-On Actions

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A01.04.00	Source Assessment	RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)	Port of Seattle Terminal 104	01003	72668645	Determine how to address identified data gaps in the western portion of T-104.	Low	Ecology, Port of Seattle		Specific data gaps could not be identified. One outfall discharges to the LDW; it drains a 1.3-acre area in the southwest corner of the property. The tenant in this area is Pacific Coast Container (PCC), which operates under an ISGP (WAR125003). A 2018 stormwater utility assessment indicated some pipes that need repair, but considered low priority.
A01.05.00	Data Evaluation	RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)	Port of Seattle Terminal 104	01003	72668645	Prepare and submit an annual report to document groundwater monitoring results and provide recommendations for future remedial efforts as stated in the VCP Cleanup Action Plan	Medium	Port of Seattle		Project is currently in final stages of property/project transfer to City of Seattle SDOT.
A01.07.00	Records Review	RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)	Port of Seattle Terminal 104	01003	72668645	Review post remediation reports and annual report as part of the VCP and determine whether further action is needed.	High	Ecology		Project is currently in final stages of property/project transfer to City of Seattle SDOT.
A01.08.00	Cleanup	RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)	Ash Grove Cement	01001	2142	Negotiate an agreed order for a Remedial Investigation/ Feasibility Study that will focus on potential soil and groundwater contamination at the site.	Medium	Ecology, Property owner/operator		Additional information about current soil and groundwater conditions is needed before negotiation of an Agreed Order
A01.11.00	Source Assessment	RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)	Ash Grove Cement	01001	2142	Inspect condition and operational records of the groundwater well used for cooling water to ensure that it cannot release contaminants into the aquifer.	Medium	Ecology WQ		It is unknown whether this well is currently active.
A02.07.01	BMP Implementation	RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	GSA / Federal Center South	03001	10233917	Clean and repair storm drain system; correct housekeeping issues	Medium	GSA		This action item was based on a 2004 inspection. Major storm drain system revisions were completed during construction of a new building at the site, based on design drawings dated August 2010 received from B. Schmoyer. An August 2010 Urban Waters inspection (during construction) found some issues. No inspection since 2010. Outfall inventory indicates there are still questions about which outfalls have been permanently plugged and which are currently active.
A02.10.02	Data Evaluation	RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	Former JANCO-United, Inc.	02114	5568786	Review groundwater data collected under VCP; determine if further source control actions are needed.	Low	Ecology		Site is listed on CSCSL as Lennox Industries; status is 'awaiting cleanup.' Arsenic and 1,4-dichlorobenzene were detected in groundwater above MTCA Method A or B levels in 2009.
A02.20.04	Cleanup	RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	Terminal 108	02119	2344	Implement appropriate source control actions.	Medium	Port of Seattle	In Progress	EPA and the Port of Seattle completed and EPA approved a Preliminary Assessment Report (PA-SI) in February 2019. The Port, City and County signed an ASAOC in 2020 to perform an EE/CA, which includes an evaluation of the need for a future removal action to address human health risks or source control.
A02.24.00	Cleanup	RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	Rainier Commons / Former Rainier Brewery Property	02053	8972, 9192461	Sample and remove PCB-contaminated building materials, including interior paint, as needed.	High	EPA/Property Owner	In Progress	EPA approved Rainier's general work plan in December 2013. Removal will take place in phases, with each phase commencing after EPA approves the individual phase work plan. In 2019 Rainier Commons submitted the Exterior Paint Abatement Phase 1 Close-out Report and Supplemental Documents to EPA. In May 2019 EPA determined that the Exterior Paint Abatement Phase 1 is complete. Work continued on the phased removal of PCB-containing paint from outdoor and indoor surfaces at these buildings in the fall of 2019.
A02.32.00	Data Evaluation	RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)	North Star Casteel	02042	18301, 21195, 11628955	Review results of environmental investigations to determine if sediment COCs are present in soil and/or groundwater at concentrations that exceed screening levels, and determine if additional actions are needed for source control.	Low	Ecology		
A03.03.00	Environmental Sampling	RM 0.9-1.0 East (Slip 1)	Federal Center South	03001	10233917	Conduct a visual bank survey; collect and analyze bank soil samples for sediment COCs to evaluate the potential for sediment recontamination from bank erosion.	Medium	Ecology, Property owner/operator		
A03.04.00	Source Assessment	RM 0.9-1.0 East (Slip 1)	Federal Center South	03001	10233917	Perform Site Hazard Assessment	High	Ecology		
A03.06.00	Inspection	RM 0.9-1.0 East (Slip 1)	Federal Center South	03001	10233917	Determine if Federal Center South must apply for coverage under the Industrial Stormwater General Permit.	Medium	EPA, Ecology		

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A03.08.00	Environmental Sampling	RM 0.9-1.0 East (Slip 1)	Former Snopac Products Property	03003	1523145, 3967301	If there is potential for historical releases, require the property owner/operator to collect soil and groundwater samples and analyze them for sediment COCs. Prepare and implement a plan to remediate soil and/or groundwater, as needed.	Medium	Ecology	In Progress	Samples were collected and analyzed; soil and groundwater remediation will be implemented as part of Agreed Order DE-16300. The PLP's conducted additional sampling to characterize soil under the existing warehouse and to assess groundwater quality within the uplands portion of the site in August 2019. An RI report was submitted to Ecology in October 2019.
A03.14.00	Records Review	RM 0.9-1.0 East (Slip 1)	Manson Construction Company	03002	80333167	Obtain laboratory data and site plans from historical site assessment(s) and remediation performed at the property. Confirm that satisfactory completion of soil cleanup activities was achieved. Determine if arsenic or other sediment COCs are present in soil and groundwater beneath the facility at concentrations that may recontaminate sediments.	High	Ecology		
A03.15.00	Environmental Sampling	RM 0.9-1.0 East (Slip 1)	Manson Construction Company	03002	80333167	If satisfactory soil cleanup was not achieved, require the property owner/operator to conduct a site assessment to determine residual concentrations of sediment COCs in soil and groundwater beneath the property.	High	Ecology		
A03.17.00	Environmental Sampling	RM 0.9-1.0 East (Slip 1)	Manson Construction Company	03002	80333167	Conduct a visual bank survey during low tide conditions; collect and analyze bank soil samples for COCs. Reconnaissance cores should be collected along the top and bottom of the bank to determine “as is” conditions.	Medium	Ecology		
A04.09.00	Information Request	RM 1.0-1.2 East (KC Lease Parcels)	Cadman Seattle, Inc.	04001	70313617	Require Cadman to report when discharges to Outfall No. 2244 occur to allow Ecology to track overflow events and evaluate potential impacts to the LDW.	High	Ecology		
A04.14.00	Records Review	RM 1.0-1.2 East (KC Lease Parcels)	United Western Supply	04003	9953954	Obtain and review the March 1997 environmental assessment report, prepared by Boateng, in order to identify potential sources of COCs to sediment and develop appropriate source control actions.	Medium	Ecology		
A04.19.00	Environmental Sampling	RM 1.0-1.2 East (KC Lease Parcels)	J.A. Jack & Sons	04002	37836248	Require J.A. Jack to obtain environmental data to assess the groundwater quality in the infiltration gallery in order to determine if sediment COCs are present in groundwater and if these COCs may be transported to the LDW.	Medium	Ecology		
A04.20.00	Inspection	RM 1.0-1.2 East (KC Lease Parcels)	J.A. Jack & Sons	04002	37836248	Conduct a visual bank survey. If bank erosion is likely, collect bank soil samples and analyze them for sediment COCs to evaluate the potential for contaminants to enter the LDW via bank erosion.	Medium	Ecology		
A04.22.02	Records Review	RM 1.0-1.2 East (KC Lease Parcels)	Chevron 9-0636	25101	1792892	Review information regarding LUSTs at Chevron 9-0636 to evaluate the potential for sediment recontamination, if any, that may be associated with these facilities.	Low	Ecology		Chevron 9-0636 is a state cleanup site; status is listed as Awaiting Cleanup. An SHA was performed in 2015, and the site was assigned a rank of 4. Contaminants are TPH and benzene.
A04.23.00	Inspection	RM 1.0-1.2 East (KC Lease Parcels)	Union Pacific Motor	2131	74589256	Perform an inspection at Union Pacific Motor (a LUST facility) to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.	Low	Ecology TCP		This is a state cleanup site; status is listed as Cleanup Started. An SHA was performed in 2015, and the site was assigned a rank of 5. A stormwater compliance inspection was conducted in February 2019; several permit violations were identified.
A04.24.02	Inspection	RM 1.0-1.2 East (KC Lease Parcels)	Seattle-SPU Materials Storage Yard	25156	NA	Perform an inspection at the SPU Materials Storage Yard; this facility holds a KCIW discharge authorization but had not been assigned a Facility/Site ID number by Ecology at the time the SCAP was prepared.	Low	Ecology		
A05.02.00	Cleanup	RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)	Saint Gobain Containers Inc.	05003	94925241	Determine appropriate engineering controls for the inaccessible contamination located beneath the soil/water separator described in the 1991 Limited UST Assessment.	High	Property Owner/Operator		This is a state cleanup site; status is listed as Cleanup Started.

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A05.06.00	Data Evaluation	RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)	Longview Fibre Paper and Packaging	05002	2226	Review the latest groundwater monitoring report regarding exceedances of diesel-range hydrocarbons.	High	Ecology		If needed, require the property owner/operator to prepare a remedial action plan. This is a state cleanup site; status is listed as Cleanup Started. Most recent groundwater sampling was in 2012; diesel-range hydrocarbons exceeded MTCA and PCULs in one well.
A05.12.00	Records Review	RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)	Certainteed Gypsum	05001	2253	Locate and review the 500-gallon UST closure report documented in Ecology's UST database. Evaluate the potential for groundwater contamination.	Low	Ecology		This is a state cleanup site; status is listed as Cleanup Started.
A05.13.01	Cleanup	RM 1.0-1.2 East (KC Lease Parcels)	Burlington Environmental/PSC Environmental Services	25163	47779679	Implement Cleanup Action Plan as specified in Agreed Order and Dangerous Waste Permit.	Medium	Property Owner/Operator	In Progress	Of the cleanup actions required by the 2010 CAP, three primary actions have yet to be completed: (1) implementation of in-situ bioremediation (groundwater behind the barrier wall), (2) establishment of an environmental covenant for the Burlington property, and (3) establishment of an environmental covenant for the adjoining UPRR property. Completion of in-situ bioremediation (1 above) is expected in May 2020.
A05.14.02	Cleanup	RM 1.0-1.2 East (KC Lease Parcels)	Art Brass Plating	25161	88531932	Complete the West of 4th Site Feasibility Study, finalize FS report and draft Cleanup Action Plan.	Medium	Ecology/Property Owner/Operator	In Progress	Pilot studies and interim action activities were initiated in the second half of 2018 and are scheduled to continue through 2019. PLP Group plans to work on completing a joint Feasibility Study (FS) in 2020.
A05.16.02	Cleanup	RM 1.0-1.2 East (KC Lease Parcels)	Blaser Die Casting	25162	7118747	Complete the West of 4th Site Feasibility Study, finalize FS report and draft Cleanup Action Plan.	Medium	Ecology/Property Owner/Operator	In Progress	Pilot studies and interim action activities were initiated in the second half of 2018 and are scheduled to continue through 2019.PLP Group plans to work on completing a joint Feasibility Study (FS) in 2020.
A05.17.02	Cleanup	RM 1.0-1.2 East (KC Lease Parcels)	Capital Industries Inc.	25164	11598755	Complete the West of 4th Site Feasibility Study, finalize FS report and draft Cleanup Action Plan.	Medium	Ecology/Property Owner/Operator	In Progress	Pilot studies and interim action activities were initiated in the second half of 2018 and are scheduled to continue through 2019.PLP Group plans to work on completing a joint Feasibility Study (FS) in 2020.
A05.18.00	Cleanup	RM 1.0-1.2 East (KC Lease Parcels)	Burlington Environmental/PSC Environmental Services	25163	47779679	Complete the West of 4th Site Feasibility Study, finalize FS report and draft Cleanup Action Plan.	Medium	Ecology/Property Owner/Operator	In Progress	Pilot studies and interim action activities were initiated in the second half of 2018 and are scheduled to continue through 2019.PLP Group plans to work on completing a joint Feasibility Study (FS) in 2020.
A06.01.00	BMP Implementation	RM 1.7-2.0 East (Slip 2 to Slip 3)	1st Avenue S Bridge Storm Drain (Outfall 2503)	NA	NA	Assess the effectiveness of the vegetated swale in treating stormwater discharged via Outfall 2503.	Medium	Ecology		
A06.14.00	Environmental Sampling	RM 1.7-2.0 East (Slip 2 to Slip 3)	Seattle Biodiesel	06007	5023482	Collect information regarding chemical concentrations in bank soils. A 2007 spill of process mixture flowed across the bank soils at this property.	Medium	Ecology		General Biodiesel now operates at this location.
A06.25.00	Source Assessment	RM 1.7-2.0 East (Slip 2 to Slip 3)	Former Frank's Used Cars	06005	2337	Review the current status of cleanup activities at this site to determine whether residual soil contamination poses a risk of sediment recontamination.	Medium	Ecology		This site is listed as 'awaiting cleanup' on the CSCSL. An SHA conducted at this site in 2015 assigned a rank of 4 due to arsenic, cadmium, lead, PCBs and BTEX in shallow soil.
A06.28.00	Inspection	RM 1.7-2.0 East (Slip 2 to Slip 3)	Fittings, Inc.	06004	22569	Determine whether this facility should apply for coverage under the Industrial Stormwater General Permit	Medium	Ecology		SPU inspected in 2015 and found illicit connection to the storm drain discharging to Slip 2. Facility corrected the problem in 2016.
A06.30.00	Data Evaluation	RM 1.7-2.0 East (Slip 2 to Slip 3)	Former Consolidated Freightways	06002	54757868	Locate and review the results of soil and groundwater sampling proposed in 2000 (if the sampling plans were implemented), and assess the potential for sediment recontamination via groundwater transport.	Medium	Ecology	In Progress	The current site owner (Prologis, Inc.) is conducting a cleanup of this site under the VCP (NW3050). A cleanup action closure report was submitted to Ecology in July 2018. Further remedial action is needed.
A06.31.00	Source Assessment	RM 1.7-2.0 East (Slip 2 to Slip 3)	Former Consolidated Freightways	06002	54757868	Search for additional information regarding the two dump areas located just east of East Marginal Way S in 1940, as identified in historical aerial photographs (Harper-Owest 1985, Item 21), and evaluate the potential for sediment recontamination associated with these areas.	Medium	Ecology		This area of the site was covered by industrial development in 1961. It is within the boundaries of Cleanup Site 6262 (Consolidated Freightways), which is being remediated under VCP NW3050.
A06.32.00	Inspection	RM 1.7-2.0 East (Slip 2 to Slip 3)	Emerald Tool, Inc.	25166	2084	Conduct a business inspection at this facility; request information regarding concentrations of sediment COCs in soil and catch basins at this property.	Low	Ecology		In 2018, a site investigation at an adjoining property found chlorinated solvents in groundwater above MTCA cleanup levels; Ecology concluded that contaminants likely migrated from Emerald Tool.

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A06.34.00	Cleanup	RM 1.7-2.0 East (Slip 2 to Slip 3)	Kelly Moore Paint Company	25167	2163	Determine the current status of cleanup efforts to evaluate whether additional remedial activities are required.	Low	Ecology	In Progress	Cleanup is in progress at this site under the VCP (NW 2305). Kelly Moore submitted the Additional Monitoring Well Installation Work Plan to Ecology in April 2019. In October 2019 Kelly Moore submitted the 2018 Summary of Investigations and Remedial Actions to Ecology. In November 2019 Ecology VCP determined that additional work is needed to characterize the groundwater plume at this site.
A06.37.01	Source Assessment	RM 1.7-2.0 East (Slip 2 to Slip 3)	Pioneer Porcelain Enamel Company	25168	2161	Request the property owner to provide information regarding the nature and extent of soil contamination at the site to determine if contaminants in soil may be leaching to groundwater, and if contaminated groundwater may then be infiltrating into the combined sewer system.	Low	Ecology		This site is listed on the CSCSL as 'awaiting cleanup' with confirmed metals contamination in soil.
A06.37.02	Source Assessment	RM 1.7-2.0 East (Slip 2 to Slip 3)	Scougal Rubber corp.	25169	93637295	Request the property owner to provide information regarding the nature and extent of soil contamination at the site to determine if contaminants in soil may be leaching to groundwater, and if contaminated groundwater may then be infiltrating into the combined sewer system.	Low	Ecology	In Progress	Site cleanup is in progress under VCP NW1707. Soil was excavated in 2017 to remove residual TCE contamination. An oxidation infiltration system was installed and began operation in 2017; infiltration events were planned for 2018 and 2019.
A06.37.03	Source Assessment	RM 1.7-2.0 East (Slip 2 to Slip 3)	Sonn Property	25169	93637295	Request the property owner to provide information regarding the nature and extent of soil contamination at the site to determine if contaminants in soil may be leaching to groundwater, and if contaminated groundwater may then be infiltrating into the combined sewer system.	Low	Ecology		Same FSID as Scougal Rubber above.
A06.37.04	Source Assessment	RM 1.7-2.0 East (Slip 2 to Slip 3)	Unocal Service Station 0907	25172	2825755	Request the property owner to provide information regarding the nature and extent of soil contamination at the site to determine if contaminants in soil may be leaching to groundwater, and if contaminated groundwater may then be infiltrating into the combined sewer system.	Low	Ecology		The site is listed as 'cleanup started' on the CSCSL, with confirmed contamination of soil and groundwater (petroleum products, non-halogenated VOCs).
A07.02.00	Source Assessment	RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	S Brighton Street SD	NA	NA	Conduct source tracing in the S Brighton Street SD basin.	High	SPU, Ecology	In Progress	SPU jetted and cleaned the entire drainage system in 2010. In 2018, zinc (970 mg/kg), TPH-oil (3,350 mg/kg), BEHP (4.04 mg/kg DW), and dibutyl phthalate (22.1 mg/kg DW), exceeded the CSL in an inline sample at MH223. These concentrations are higher than what was measured in this system two years after cleaning. SPU will continue to monitor this system.
A07.03.01	Records Review	RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	S Brighton Street SD	07008	11887871, 2134	Review VCP files pertaining to four former facilities at South Seattle Community College (Arrow Transportation, Inland Transportation Company, Ben's Truck Repair, and Hat n' Boots Gas Station). Investigate the South Seattle Community College property to determine what cleanup actions may have been conducted during development, and whether potential sources of sediment recontamination may remain onsite from the four former facilities.	Medium	Ecology		Inland Transportation (Arrow Transportation) is a cleanup site (CSID 5061). Ecology has determined that no further action is needed at this site.
A07.04.00	Records Review	RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	South Seattle Community College		NA	Based on the review of VCP files investigate, if necessary, the South Seattle Community College property to determine what cleanup actions may have been conducted during development, and whether potential sources of sediment recontamination may remain onsite from the four former facilities of concern.	Medium	Ecology		

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A07.06.00	Source Assessment	RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	S River Street SD	NA	NA	Conduct source tracing in the S River Street SD basin.	High	SPU, Ecology	In Progress	SPU jetted and cleaned the entire system in 2010. Elevated levels of PAHs (1.2 mg/kg DW) were found in a surface dirt sample collected adjacent to an onsite catch basin in 2018. SPU had the owner clean/jet onsite drainage system and pressure wash the paved lot. SPU will resample in 2019/2020 to confirm that PAHs have been controlled. SPU conducted IDDE survey in this area in 2014. Did not find any evidence of cross connections in this system. SPU sampled the downstream-most MH in 2018. TPH-oil (2,860 mg/kg) and BEHP (4.4 mg/kg DW) exceeded the City's source tracing thresholds. SPU intends to continue monitoring storm drain solids at the downstream end of this system.
A07.14.00	Records Review	RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	V. Van Dyke	07010	68427684	Determine whether a UST may have been removed from the property without a proper closure.	Medium	Ecology		
A07.16.00	Records Review	RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	V. Van Dyke	07010	68427684	Locate and review additional reports related to V. Van Dyke property that are missing from Ecology's files.	Medium	Ecology		
A07.20.00	Cleanup	RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)	Riverside Industrial Park	07004	37289288, 44383713	Determine the status of cleanup at the facility and whether to pursue additional investigation and cleanup under an administrative order.	Medium	Ecology		This is a state cleanup site (CSID 4178); status is listed as 'Cleanup Started'. It is currently enrolled in the VCP Program.
A08.02.00	Source Assessment	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	S Garden Street and S Myrtle Street Storm Drains	NA	NA	Conduct source tracing to identify potential contaminant sources to stormwater discharging to the LDW.	High	SPU, Ecology	In Progress	SPU cleaned the entire system in 2010. S Garden Street SD: Seattle Iron and Metals (SIM) owns the downstream end of the drainage system located on their property. SPU required Seattle Iron and Metals to install a Filterra treatment unit on S Garden Street to control pollutant track out from the processing area at 701 S Orchard St. No samples were collected in 2018. S Myrtle Street SD: SPU installed 5 styles of sediment traps in the 2 downstream-most MHs in this system in 2016 as part of the sediment trap pilot study. Samples collected from 3 of the traps in 2018 contained elevated levels of copper (540 to 660 mg/kg), lead (540 to 620 mg/kg), mercury (1.4 to 1.9 mg/kg), PCBs (2.3 to 2.9 mg/kg DW), and TPH-oil (8,000 mg/kg). SDOT sweeps S Myrtle Street and S Garden Street every week. SPU also required SIM to install Filterra stormwater water treatment units on S Myrtle Street adjacent to driveway to control track out. Per Puget SoundKeepers lawsuit, SIM is required to design/install a dust collection system for the shredder unit, install wind fences to capture fugitive dust emissions, and design/implement a 2-phase dust emission monitoring program (to start in 2019).
A08.06.00	Inspection	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Seattle Boiler Works, Inc.	08008	17577864	Determine if the five outfalls that are not included in Seattle Boiler Work's NPDES permit are in use. If in use and Seattle Boiler Works is the source of discharge, modify the facility's stormwater permit to include these outfalls.	High	Ecology		
A08.12.01	Source Assessment	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Seattle Iron & Metals Corporation	08010	94727791	Review stormwater improvements, when completed, to assess the potential for transport of ASR to the LDW.	Medium	Ecology		Stormwater treatment upgrade has been completed, however effluent violations continue. Effluent violations continued in 2019. On 2/11/19 Ecology issued a Notice of Penalty to SIM for effluent violations and fined Seattle Iron & Metal $98,000. Ecology sent the facility a warning letter on 9/18/19.
A08.18.00	Source Assessment	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Puget Sound Truck Lines	08007	41684823	Determine whether the five outfalls identified at the property are active, and identify the source of discharge from these outfalls, if any.	High	Ecology, Property owner/operator		Current operator at this property is Recology CleanScapes.
A08.20.00	Records Review	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Seattle City Light Georgetown Pump Station	08009	21369	Obtain and review information about any groundwater sampling that has been conducted at this property. Based on this review, evaluate the need for further source control actions.	Medium	Ecology		

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A08.21.00	Cleanup	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Crowley Marine Services	09002	1940187	In conjunction with an Agreed Order for the Crowley Marine Services site, perform additional investigations that include collection of data on chemical concentrations in soil and groundwater at the western and southern portions of the property.	High	Property owner/operator	In Progress	To be conducted in accordance with Agreed Order No. DE-6721. A Public Review Draft RI Report was completed in 2019. A supplemental investigation for the draft FS is in progress.
A08.27.01	Cleanup	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Fox Avenue Building	08002	2282	Conduct sitewide groundwater monitoring and continue ERD treatment and additional substrate injection in the downgradient area at Seattle Boiler Works property.	Medium	Property owner/operator	In Progress	Groundwater monitoring and substrate injection (including on the Seattle Boiler Works property) is continuing under Agreed Order DE-8985.
A08.29.00	Cleanup	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Whitehead Company, Inc./Former Tyee Industries	08013	9809, 48578491	Require the property owner/operator to address the pentachlorophenol contamination in groundwater discovered by Cascade Columbia Distributions' consultant.	Medium	Ecology	In Progress	An Agreed Order (DE-13548) was signed in August 2016 requiring Seattle Iron and Metals and 730 Myrtle LLC to implement an interim action, conduct an RI/FS, and prepare a draft CAP. The interim action for removal of some of the PCP-contaminated soils (where the stormwater treatment system is to be installed) was completed in 2018. The Interim Action Completion report is expected to be finalized in early 2020.
A08.31.00	Inspection	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Whitehead Company, Inc./Former Perkins Lot	08006	43114188	Conduct facility inspection to determine if activities conducted by businesses at 720 S Orchard Street require an NPDES permit, and to ensure compliance with applicable codes and regulations.	Medium	Ecology, EPA	In Progress	In 2013 Taxi King was granted coverage under the NPDES ISGP; the permit was canceled in March 2014. No additional information available.
A08.34.00	Information Request	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Whitehead Company, Inc./Former Perkins Lot	08006	43114188	Obtain a list of previous tenants from the property owner to evaluate historical operations and to determine if these operations could have resulted in soil or groundwater contamination.	Medium	Ecology, Property owner/operator		An NFA determination was made for this site (CSID 1257) by Ecology in 2006.
A08.39.00	Source Assessment	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Former Sternoff Parcel	08011	2057	Evaluate the need for additional soil and groundwater samples and analyze them for sediment COCs to determine the potential for sediment recontamination via the groundwater discharge pathway.	Medium	Ecology		This cleanup site (CSID 4466) is listed as 'awaiting cleanup.'
A08.40.00	Records Review	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Former Sternoff Parcel	08011	2057	Locate documentation verifying that a PCB-contaminated "trash pile" and approximately 52,187 pounds of contaminated soil have been removed from the property.	Medium	Ecology		
A08.41.00	Records Review	RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)	Former Sternoff Parcel	08011	2057	Determine the disposition of petroleum-contaminated soil stockpiled at the property by Remedco and provide the documentation to Ecology.	Low	Ecology		
A09.03.00	Environmental Sampling	RM 2.8 East (EAA-3: Slip 4)	North Boeing Field / KCIA / I-5 Storm Drains	09006, 09009	2387398, 2753918	Reinstall sediment traps and continue monitoring as needed.	High	SPU, Boeing, King County	In Progress	Boeing discontinued sediment trap sampling as of 2017. King County and SPU continue to reinstall and sample sediment traps at KCIA and the I-5 storm drain, respectively. In 2019, SPU collected one sediment trap sample and in inline grab sample at T6 (along the I-5 SD to Slip 4). The PCB concentration in the T6 sediment trap exceeded the SCO. Downstream sediment traps were not sampled in 2019.
A09.04.02	Source Assessment	RM 2.8 East (EAA-3: Slip 4)	North Boeing Field	09009	2753918	Determine impact of remaining joint sealant material on PCB concentrations in stormwater.	High	Ecology	In Progress	Investigation of joint sealant is continuing as part of the RI/FS.
A09.08.02	Source Assessment	RM 2.8 East (EAA-3: Slip 4)	North Boeing Field	09009	2753918	Continue source tracing in north drain line to identify and/or eliminate transport of PCBs to Slip 4.	High	Boeing	In Progress	Source tracing is continuing as part of the RI/FS.
A09.29.00	Cleanup	RM 2.8 East (EAA-3: Slip 4)	Crowley Marine / 8th Avenue Terminals	09002	1940187	Conduct investigation and cleanup activities in accordance with the Agreed Order, including collection of groundwater and storm drain system samples as appropriate.	Medium	8th Avenue Terminals (Crowley)	In Progress	Stormwater catch basin samples have been collected. Results are reported in the Public Review Draft RI (August 2019). The tenant, Waste Management, installed stormwater treatment in early 2019. A supplemental investigation for the draft FS is in progress.
A09.38.00	Data Evaluation	RM 2.8 East (EAA-3: Slip 4)	Boeing Plant 2	10002	2100	Assess existing groundwater data in the area.	Low	Ecology, EPA		Boeing conducted shoreline groundwater monitoring during 2017, however reports were not available for review.
A09.43.03	Cleanup	RM 2.8 East (EAA-3: Slip 4)	KCIA	09006	2387398	Conduct soil and groundwater investigation and cleanup under Ecology's VCP.	Low	KCIA, property operator	In Progress	Shultz and subtenant operators are conducting investigations at the site for eventual cleanup under the VCP. KCIA lessee and subtenant operators are conducting investigations at the site for eventual cleanup under the VCP.

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A09.54.00	Cleanup	RM 2.8 East (EAA-3: Slip 4)	NBF-GTSP	09005, 09006, 09009	2050	Conduct RI/FS and implement interim actions (as needed).	High	Ecology, Boeing, City of Seattle, King County	In Progress	RI/FS is in progress. In 2019, groundwater sampling events were conducted in February and August at NBF. Off-property soil vapor and groundwater sampling along Ellis Avenue were conducted in September 2019.
A10.01.00	Cleanup	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Boeing Plant 2	10002	2100	Evaluate the remaining Plant 2 Corrective Measures Study study areas and continue to determine needed source control actions.	Medium	EPA, Boeing	In Progress	Boeing has completed many of the interim soil cleanups and installed stormwater treatment systems. EPA expects to publish a proposed final cleanup plan for the upland area of Boeing Plant 2 in 2019.
A10.02.00	Cleanup	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Boeing Plant 2	09006	63879778	Continue to delineate and evaluate the EMF plume.	Medium	EPA, Boeing	In Progress	An EE/CA was completed in December 2015, and a public review period ended in August 2016. EPA has delayed preparation of the Action Memorandum due to prioritization of other sites. Boeing conducted bioremediation treatment in selected areas at the site in November 2017. Boeing conducted additional treatments in 2018. King County continues to monitor activities.
A10.05.00	Cleanup	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Boeing Plant 2	10002	2100	Conduct monthly sampling, including groundwater sampling and vapor sampling of the DDC wells and multiple points along the vapor treatment system.	Medium	EPA, Boeing	In Progress	
A10.06.00	Cleanup	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Boeing Plant 2	10002	2100	Continue shoreline groundwater monitoring.	High	EPA, Boeing	In Progress	Shoreline groundwater monitoring was conducted during 2017, however reports were not available for review. EPA issued a determination that migration of contaminated groundwater is under control.
A10.09.01	Source Assessment	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Boeing Plant 2	10002	2100	Conduct an investigation to provide additional hydrogeologic data at the boundary of the Boeing Plant 2/Jorgensen Forge facilities.	High	Boeing	In Progress	Activities at Plant 2 have reportedly been completed, however no documentation has been provided.
A10.09.02	Source Assessment	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Jorgensen Forge	10003	2382	Conduct an investigation to provide additional hydrogeologic data at the boundary of the Boeing Plant 2/Jorgensen Forge facilities.	Medium	Jorgensen Forge	In Progress	Jorgensen Forge will be investigated, as necessary, under new Agreed Order DE-14143, and results will be presented in the RI Report.
A10.11.00	Environmental Sampling	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Boeing Plant 2	10002	2100	Collect in-line sediment samples in the city of Seattle and city of Tukwila systems immediately prior to discharge to Plant 2's storm drain system.	High	Ecology, Boeing		City of Seattle lines have been closed. Boeing is working with the city of Tukwila. In October 2017, EPA suspended stormwater monitoring under the Boeing RCRA Order in deference to Ecology's Water Quality Program.
A10.18.00	Source Assessment	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Jorgensen Forge	10003	2382	Develop a hydrogeologic site model as part of the source control investigation to characterize the groundwater system on site, including tidal influence.	High	Jorgensen, Boeing	In Progress	For the Jorgensen site, a tidal study/hydrogeologic investigation and conceptual model will be conducted, as necessary, under Agreed Order DE-14143. Results will be presented in the RI Report.
A10.33.00	Cleanup	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	Jorgensen Forge	10003	2382	Complete a Remedial Investigation/Feasibility Study of the upland site area	High	Jorgensen, Boeing	In Progress	Agreed Order (DE-14143) was signed in July 2017; this action item will be completed under the Agreed Order, and will be presented in the RI Report.
A10.34.00	BMP Implementation	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	East Marginal Way S.	11002	NA	Install stormwater treatment for roadway runoff discharged through the newly dedicated City of Tukwila outfall (the former Plant 2 Z line)	Medium	City of Tukwila	In Progress	This retrofit project is funded in part by an Ecology Stormwater Financial Assistance Program grant. Project has been delayed due to funding issues.
A11.12.00	Cleanup	RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)	Boeing Isaacson/Thompson Site	11001	2218	Clarify the purpose, function, and configuration of the edge drains along the Boeing Isaacson shoreline.	Low	Boeing, Port of Seattle	In Progress	To be addressed as part of Agreed Order No. DE-7088 (Ecology 2010 [6812]).
A11.14.00	Cleanup	RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)	Boeing Isaacson/Thompson Site	11001	2218	Investigate the status and source of the unidentified outfall pipe located near the Boeing Isaacson/Jorgensen Forge property boundary (Outfall 2063).	Low	Boeing		To be addressed as part of Agreed Order No. DE-7088.
A11.16.00	Cleanup	RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)	Boeing Isaacson/Thompson Site	11001	2218	If COCs in soil and groundwater are present at concentrations that pose a risk of sediment recontamination, then develop a plan for controlling these contaminant sources.	High	Ecology, Boeing	In Progress	To be addressed as part of Agreed Order No. DE-7088. Final RI submitted 4/21/2014. Supplemental Port of Seattle "sliver" property subsurface investigation conducted in 2015. PLP working on draft FS.
A11.19.00	Cleanup	RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)	Boeing Isaacson/Thompson Site	11001	2218	Review Boeing memorandum regarding findings associated with the two drainage pipes that may be discharging to the 8801 Site, and assess the potential that these discharges may contribute to recontamination of LDW sediments.	Medium	Ecology	In Progress	To be addressed as part of Agreed Order No. DE-7088.

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A11.27.00	Source Assessment	RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)	KCIA	11002	72811433	Assess/confirm the adequate completion of cleanup activities associated with petroleum Leaking Underground Storage Tanks at Hangar Holdings.	Low	Ecology		Site is listed as 'cleanup started' (CSID 6574), with confirmed contamination with petroleum products and non-halogenated solvents.
A11.31.00	Cleanup	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	KCIA	09006	63879778	Monitor remedial activities at the former Boeing EMF to ensure that contaminated soil does not enter the storm drain system.	Medium	King County, EPA	In Progress	Boeing conducted bioremediation treatment in selected areas at the site in November 2017. Boeing conducted additional treatments in 2018. King County continues to monitor activities.
A12.06.00	Cleanup	RM 3.9-4.3 East (Slip 6)	8801 Site (Former PACCAR Site)	12001	2072	Re-evaluate existing soil and groundwater data and compare to site-specific screening levels (to be developed) for metals, PAHs, petroleum hydrocarbons, PCBs, SVOCs, and VOCs as COCs in the LDW, and test for dioxin/furans.	High	Ecology, Property owner/operator	In Progress	A Public Review Draft FS and Interim Action Work Plan (IAWP) were submitted to Ecology in June 2019. Ecology expects an engineering design report for the work described in the IAWP is expected in 2002.
A12.08.00	Cleanup	RM 3.9-4.3 East (Slip 6)	8801 Site (Former PACCAR Site)	12001	2072	Complete Phase 2 of the Sediment Evaluation Work, which includes sediment core sampling in selected locations in the LDW adjacent to the site.	High	Ecology, Property owner/operator		
A12.09.00	Cleanup	RM 3.9-4.3 East (Slip 6)	8801 Site (Former PACCAR Site)	12001	2072	Negotiate expanding the stormwater and storm drain solids monitoring to add COCs at the site. Review future monitoring results to determine if further actions are necessary.	High	Ecology, Property owner/operator	In Progress	
A12.10.00	BMP Implementation	RM 3.9-4.3 East (Slip 6)	8801 Site (Former PACCAR Site)	12001	2072	Review the current SWPPP and Operations and Maintenance Plan. Make necessary changes and additions to prevent contaminants from potential upland sources (such as fuel leaks from damaged vehicles) from migrating to Slip 6 sediments via the stormwater system.	Medium	Ecology, Property owner/operator		In November 2019 Insurance Auto Auctions (IAA) lease expired and they vacated this location at that time. IAA submitted a Notice of Termination for ISGP (WAR008681); Ecology terminated this permit on 11/22/19.
A12.12.00	Cleanup	RM 3.9-4.3 East (Slip 6)	Former Rhône-Poulenc Site	12005	2150	Continue to monitor the effectiveness of the hydraulic interim control measure, and investigate the presence of elevated copper concentrations in groundwater outside the barrier wall and the potential leak in the barrier wall.	High	EPA, Property owner/operator	In Progress	The HICM is still in operation and effective. An investigation of shoreline bank contamination was completed Sept 2012. Groundwater outside the barrier wall (included in Shoreline Area of site) will be addressed as part of the future site cleanup under RCRA. EPA established PRGs in March 2014, and Respondents submitted a draft CMS work plan to EPA in Sept 2014. In 2017 EPA approved a work plan for a CO2 Injection Pilot Study to address high pH, and work will start in 2018. EPA will continue working with the property owner to conduct the pilot study, assess the current conditions of groundwater throughout the site, update the PRGs, and continue with the CMS.
A12.13.00	Cleanup	RM 3.9-4.3 East (Slip 6)	Former Rhône-Poulenc Site	12005	2150	Investigate and address shoreline bank contamination from historical site operations and releases (e.g. application of vanillin black liquor solids to the shoreline bank for weed control).	High	EPA, Property owner/operator	In Progress	An investigation of shoreline bank contamination was completed Sept 2012. The Shoreline Area will be addressed as part of the future site cleanup under RCRA. In 2017 EPA approved a work plan for a CO2 Injection Pilot Study to address high pH, and work will start in 2018. EPA will continue working with the property owner to conduct the pilot study, assess the current conditions of groundwater throughout the site, update the PRGs, and continue with the CMS.
A12.14.00	BMP Implementation	RM 3.9-4.3 East (Slip 6)	Former Rhône-Poulenc Site	12005	2150	Review the current SWPPP and Operations and Maintenance Plan. Make necessary changes and additions to prevent contaminants from potential upland sources (such as fuel leaks from damaged vehicles) from migrating to Slip 6 source control area sediments via the stormwater system.	High	Ecology, Property owner/operator		West parcel is leased by Container Properties to Insurance Auto Auctions; activities are covered IAA's permit.
A12.21.00	Environmental Sampling	RM 3.9-4.3 East (Slip 6)	Museum of Flight (MOF)	12004	98798343	Monitor stormwater and/or storm drain solids at MOF and former BDC properties in the vicinity of USTs and associated groundwater contamination.	High	Ecology, Property owner/operator	In Progress	Boeing is responsible for the former BDC property (west of East Marginal Way). Stormwater will be monitored under WQ AO 15600. Historical storm drain solids sampling data for the former BDC property will be reviewed under MTCA AO DE 16275. The presence of USTs at the former BDC property will be investigated by Boeing.

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A12.22.00	Cleanup	RM 3.9-4.3 East (Slip 6)	Museum of Flight (MOF)	12004	98798343	Develop a plan to remove USTs and associated soil and groundwater contamination on the MOF property.	Medium	Ecology, Property owner/operator		If any USTs are identified on the former BDC property, Boeing will be required to develop a UST removal and soil/GW investigation plan. Presence of USTs in the MOF property east of East Marginal Way needs to be investigated separately.
A12.23.00	Cleanup	RM 3.9-4.3 East (Slip 6)	Museum of Flight (MOF)	12004	98798343	Identify the source and extent of groundwater contamination on the former BDC property, and conduct remedial action, as necessary.	High	Ecology, Property owner/operator	In Progress	Will be identified during the RI; remedial action will be conducted if needed.
A12.26.00	Information Request	RM 3.9-4.3 East (Slip 6)	BDC - North	12002	2101	Investigate UST locations to determine whether any USTs are located within the Slip 6 drainage basin and whether any USTs present a source of contaminants to soil and/or groundwater.	Low	Boeing	In Progress	The drainage basin to the two outfalls flowing into Slip 6 (DC 14 and DC 15) includes Buildings 9-05, 9-07, 9-04, 9-77, 9-08 at the BDC. The RI will include investigation of the presence of USTs.
A13.02.00	Environmental Sampling	RM 4.3-4.9 East (Boeing Developmental Center)	BDC Outfalls	13001	2101	Request Boeing to prepare a work plan for collection of subsurface sediment samples in the area of the LDW adjacent to the BDC outfalls.	Medium	Ecology/Boeing	In Progress	Subsurface sediment sampling will be conducted during the RI.
A13.06.00	Cleanup	RM 4.3-4.9 East (Boeing Developmental Center)	BDC - Central	13001	2101	Continue to monitor RCRA cleanup activities to ensure contaminants present in groundwater as a result of historical releases are not entering the LDW.	Low	Ecology	In Progress	RCRA activities will be completed under Agreed Order DE-16275 as part of an RI/FS/CAP for the entire BDC Site. Cleanup activities will be completed with Ecology oversight
A13.08.00	Information Request	RM 4.3-4.9 East (Boeing Developmental Center)	BDC - Central	13001	2101	Request additional information about the nature of BDC's emissions and air permit as they relate to deposition on impervious surfaces and the stormwater pathway to the LDW.	Low	Boeing	In Progress	Air sampling will be conducted under Agreed Order DE-16275 as needed to address the air deposition pathway.
A13.09.00	Environmental Sampling	RM 4.3-4.9 East (Boeing Developmental Center)	BDC - Central	13001	2101	Request Boeing to collect at least one round of seep samples from the four known seepage locations to confirm that no contaminants are being discharged to the LDW via this transport pathway.	Medium	Boeing	In Progress	Seep sampling will be conducted under Agreed Order DE-16275 to address discharge of contaminants to the LDW via this pathway.
A13.10.01	Cleanup	RM 4.3-4.9 East (Boeing Developmental Center)	BDC - Central	13001	2101	Implement the actions specified in Agreed Order 16275, including preparation of an RI/FS/DCAP and implementation of an Interim Action.	Medium	Boeing	In Progress	Actions specified under the agreed order include completion of ongoing RCRA cleanup activities.
A14.05.00	Cleanup	RM 4.9 East (EAA-7: Norfolk CSO/SD)	BDC-South	14004	4581384	Continue sediment monitoring in the vicinity of the south storm drain sediment removal activities.	High	Boeing	In Progress	Boeing continues to voluntarily monitor sediment in the vicinity of the 2003 removal action. Samples were collected in September 2017; results are slightly higher than in previous years.
A14.07.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	BDC-South	14004	4581384	Continue monitoring storm drain solids.	High	Boeing	In Progress	Boeing continues to collect samples of accumulated solids in the Vortechnics sediment trap unit. Most recent samples were collected in September 2017. Results are significantly higher than the previous year.
A14.08.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	BDC-South	14004	4581384	Determine need for cleanup of caulk and/or other building materials that may contribute PCBs to the south storm drain.	Medium	Ecology, Boeing	In Progress	Boeing continues to sample potential contaminant sources in the south storm drain. In 2017, Boeing collected solids samples from the Building 9-101 roof (0.072 to 0.19 mg/kg DW total PCBs), and water and wipe samples from a drain pipe inside the building (1.71 ug/L and 0.97 ug/wipe total PCBs, respectively).
A14.11.00	Source Assessment	RM 4.9 East (EAA-7: Norfolk CSO/SD)	BDC-South	14004	4581384	The 2007 SCAP identified a possible historical barge operation at Parcel 0423049016. Determine whether groundwater and soil sampling are needed at this parcel to assess possible historical contamination.	Medium	Ecology, Boeing	In Progress	The 2007 SCAP noted a barge visible in a historical aerial photo. The barge is still present (now rotten and abandoned) in the LDW adjacent to the noted parcel. Boeing has identified a historical Phase 1 assessment for this parcel and is attempting to obtain a copy of that report.
A14.15.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Military Flight Center	14005	14532, 72362672	Monitor stormwater for PCBs at discharge points to assess potential ongoing sources.	Medium	Boeing	In Progress	Under Administrative Order #10554 (dated 4/3/2014), Boeing is required to monitor for PCBs in stormwater. Monitoring is performed at all four designated outfall locations. In 2017, the maximum detected concentration of total PCBs was 0.096 ug/L.

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A14.16.00	Cleanup	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Military Flight Center	14005	14532, 72362672	Discuss cleanup options for removal of caulk containing PCBs at less than 50 mg/kg.	Medium	Ecology, Boeing		Boeing submitted a work plan to address PCBs in paint and caulk in April 2015; plans included application of a polymeric coating and installation of new exterior metal siding to encapsulate the materials that contain less than 50 mg/kg PCBs. Abatement of PCB-containing materials was expected to occur during late summer and fall of 2015. In an inspection on 8/13/19 Ecology directed Boeing to update the facility's SWPPP to identify ay remaining areas of PCB contamination that may contribute to stormwater and BMPs to address the sources.
A14.20.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Unified Grocers / Associated Grocers	14003	73338176	Sample monitoring wells located near the former truck shop to evaluate current groundwater flow and extent of the contaminant plume; determine if additional monitoring wells are needed.	Medium	Property owner		To be addressed as part of Agreed Order No. DE-16659.
A14.21.00	Source Assessment	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Unified Grocers / Associated Grocers	14003	73338176	Re-evaluate the free product removal strategy to determine its source control effectiveness.	Medium	Property owner		To be addressed as part of Agreed Order No. DE-16659.
A14.22.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Unified Grocers / Associated Grocers	14003	73338176	Determine whether additional groundwater and soil assessment is needed for the maintenance building where UST removal activities took place in 1995.	Medium	Ecology		To be addressed as part of Agreed Order No. DE-16659.
A14.27.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Northwest Auto Wrecking	14009	2287	Conduct soil, groundwater, surface water, and sediment sampling, as appropriate, to evaluate potential historical sources.	Medium	Northwest Auto Wrecking		Review sampling results and assess potential for sediment recontamination.
A14.28.00	Data Evaluation	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Northwest Auto Wrecking	14009	2287	Review results of soil, groundwater, surface water, and/or sediment sampling to assess potential for sediment recontamination.	Medium	Ecology		To be addressed as part of Agreed Order No. DE-16659.
A14.33.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Affordable Auto Wrecking	14001	7163112	Confirmed soil and surface water contamination with metals and petroleum products. Conduct surface water, soil, and groundwater sampling to assess the potential for sediment recontamination.	Medium	Property owner/operator		
A14.36.00	Cleanup	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Affordable Auto Wrecking	14001	7163112	Determine cleanup options for removal of historically-contaminated media, as appropriate.	Medium	Ecology, Property owner/operator		Listed on CSCSL as "awaiting cleanup."
A14.38.00	Inspection	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Affordable Auto Wrecking	14001	7163112	Oversee and monitor discharges to the combined sewer system.	Medium	KCIW		Site is vacant, but site runoff continues to discharge to sanitary sewer.
A14.39.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Arco Gas Station (Pacific Truck School)	14002	29429665	Conduct soil sampling in the area adjacent to the former tank farm under the Voluntary Cleanup Program, to determine if soils are impacted and if remediation is necessary to control this potential contaminant pathway.	Medium	Arco		Cleanup Site name is Easteys ARCO (CSID 5834). Listed as "cleanup started" but no other information available. SHA was completed in 2015.
A14.40.00	Environmental Sampling	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Arco Gas Station (Pacific Truck School)	14002	29429665	Conduct additional groundwater monitoring.	Medium	Arco		Cleanup Site name is Easteys ARCO (CSID 5834). Listed as "cleanup started" but no other information available.
A14.41.00	Data Evaluation	RM 4.9 East (EAA-7: Norfolk CSO/SD)	Arco Gas Station (Pacific Truck School)	14002	29429665	Based on results of soil and groundwater sampling, determine whether further actions are needed to address potential historical sources.	Medium	Ecology		Cleanup Site name is Easteys ARCO (CSID 5834). Listed as "cleanup started" but no other information available.
A15.01.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	SW Dakota Street SD Outfalls (Outfalls 2148, 2149, 2150, and 2233)	NA	NA	Continue source tracing to identify potential sources of the sediment COCs reported above screening levels in storm drain structures in the SW Dakota Street SD basin.	Medium	SPU, Ecology	In Progress	Outfall 2149 is the City's SW Dakota Street SD; it was relocated to the habitat swale to accommodate development on land adjacent to waterway. SW Dakota Street end was vacated to Port in 2012 (Ord # 123884). SPU cleaned this system in 2016 and continues to collect samples in this basin. SPU sampled the MH near the downstream end of the system in 2018. BEHP, benzyl alcohol, and benzoic acid exceeded the CSL. This MH is severely backwatered due to sediment accumulation in the habitat swale. SPU intends to attempt to install a trap near the high water line in 2019 to collect storm drain solids. Outfall 2148 serves the Encore Oil property at 4034 West Marginal Way SW. Outfall 2150 serves the Lipsett Co property just east of Encore. SPU GIS indicates that both of these drainage systems are privately owned. Outfall 2233 is the outlet of the salt water habitat swale constructed by the Port in 1993-1994.

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A15.02.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	SW Idaho Street SD Outfalls (Outfall 2147)	NA	NA	Continue source tracing to identify potential sources of the sediment COCs reported above screening levels in storm drain structures in the SW Idaho Street SD basin.	Medium	SPU, Ecology	In Progress	SPU jetted and cleaned the entire SW Idaho Street SD system in 2013 and continues to operate 3 sediment traps in this drainage system. 2018 samples exceeded the CSL for zinc (1,200 mg/kg), BEHP (6.5 mg/kg DW), cPAH (1.1 mg/kg DW), benzoic acid (2.4 mg/kg DW), and benzyl alcohol (1.1 mg/kg DW) at ID-ST1; and BEHP (1.9 mg/kg DW), 4-methylphenol (.71 mg/kg DW), benzoic acid (8.5 mg/kg DW), and benzyl alcohol (1.6 mg/kg DW) at ID-ST3.
A15.06.00	Information Request	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Riverside Mill Property	15021	4091, 10931	Request information from the property owner regarding the 1999 excavation and removal of soil contaminated with PCBs and lead, to evaluate the potential for sediment recontamination via the groundwater discharge pathway.	Medium	Ecology TCP		
A15.09.00	Inspection	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Port of Seattle Terminal 103	15025	7754458	Perform a facility inspection at CalPortland to verify compliance with applicable regulations and source control BMPs.	Low	Port of Seattle		Port tenant. This NPDES-permitted site discharges directly to the waterway via Port-owned outfalls and/or sheet flow. Inspections of NPDES-permitted sites that do not affect the City MS4 are a low priority for SPU. Inspections are scheduled only after City NPDES obligations are met. As this is a low priority for SPU, Port should inspect this property as described in Section 7 of its SWMP.
A15.12.00	Records Review	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Port of Seattle Terminal 105	15026	NA	Determine if the Liquid Disposal Corporation USTs have been removed from Terminal 105 park.	Medium	Port of Seattle		
A15.13.00	Information Request	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Port of Seattle Terminal 105	15026	15026	Request that the Port of Seattle and Ferguson Enterprises provide information to determine if PCB-bearing dredge spoils were removed from parcel 3530 prior to the construction of the warehouse over the disposal area.	Medium	Ecology		
A15.14.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Port of Seattle Terminal 105	15026	15026	Assess the need for an environmental investigation at the Terminal 105 Park to characterize the nature and extent of soil and groundwater contaminated by PCBs, PAHs, and metals in order to determine the potential for sediment recontamination.	Medium	Ecology		
A15.15.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Encore Oils (former Pacific Rendering)	15018	10287	Assess the need for additional environmental investigations and/or cleanup of contaminated soil.	Medium	Ecology		
A15.18.00	Information Request	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Ferguson Enterprises	15008	18675	Request that the Port of Seattle and Ferguson Enterprises provide information to determine if PCB-bearing dredge spoils were removed from parcel 3530 prior to the construction of the warehouse over the disposal area.	Medium	Ecology		
A15.19.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Ferguson Enterprises	15008	18675	Assess the need for additional environmental investigations and/or cleanup of contaminated soil and groundwater.	Medium	Ecology		
A15.20.00	BMP Implementation	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	General Recycling of Washington	15011	18553	Request that General Recycling update the facility SWPPP to include the chemical treatment upgrades to the stormwater treatment system. General Recycling will be required to provide the updated SWPPP to Ecology.	Medium	Ecology		
A15.21.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	General Recycling of Washington	15011	18553	Assess the need for additional environmental investigations and/or cleanup of contaminated soil and groundwater.	Medium	Ecology		
A15.24.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Former Seaboard Lumber Property	15022	88471591	Assess the need for additional environmental investigations at Evergreen Trails and Herring's House Park to define the nature and extent of residual soil and groundwater contamination at the properties to determine if LDW sediment near the properties is or has the potential to become contaminated via the groundwater discharge and bank erosion pathways.	Medium	Ecology		
A15.25.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Port of Seattle Terminal 107	15027	NA	Determine the potential inputs to a pipe located near the ravine in the northern portion of the Terminal 107 Park.	Medium	Port of Seattle		

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A15.26.00	Environmental Sampling	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Port of Seattle Terminal 107	15027	NA	Perform an environmental investigation to determine if soil and groundwater are contaminated due to historical industrial operations and filling activities.	Medium	Port of Seattle		
A15.29.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Former Fraser Properties	15010	14392257, 72321478	Assess the need for additional environmental investigations and/or cleanup of suspected soil and groundwater contamination at this property.	Low	Ecology		
A15.32.00	Information Request	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Former Concrete Restoration	15005	31119678	Request additional information from Brys Auto Wrecking regarding the previous environmental investigations at the property to determine if LDW sediment COCs are present in soil and groundwater at concentrations indicating a potential for sediment recontamination.	Low	Ecology		
A15.33.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Former Concrete Restoration	15005	9688	Assess the need for additional investigations and/or cleanup of suspected soil and groundwater contamination at this property.	Low	Ecology		
A15.34.00	Information Request	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	West Seattle Estates	15030	3858982	Request information regarding cleanup and groundwater monitoring at West Seattle Estates to evaluate the potential for sediment recontamination via the groundwater discharge pathway.	Low	Ecology		
A15.35.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	West Seattle Estates	15030	3858982	Assess the need for additional investigations and/or cleanup of soil and groundwater contamination at this property.	Low	Ecology		
A15.36.00	Information Request	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Puget Park	15019	2479	Request information from Seattle Parks to determine if the leachate collection trench was installed down gradient of the Puget Park Lobe.	Low	Ecology		
A15.37.00	Source Assessment	RM 0.0-1.0 West (Spokane Street to Kellogg Island)	Puget Park	15019	2479	Assess the need for additional investigations and/or cleanup of soil and groundwater contamination at this property.	Low	Ecology		
A16.01.00	Information Request	RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)	Lafarge North America Inc. Seattle	16001	2132	Request information from Lafarge regarding the status of Outfall 001/2139 and 004.	Medium	Ecology		
A16.03.00	Data Evaluation	RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)	Lafarge North America Inc. Seattle	16001	2132	Review new sediment data from the 2009 Lafarge maintenance dredging and the 2011 surface sediment sampling conducted by Ecology to determine if additional sediment sampling is needed for sediment characterization.	Medium	Ecology		
A16.06.00	Environmental Sampling	RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)	Lafarge North America Inc. Seattle	16001	2132	Request Lafarge to collect environmental data to determine if soil and groundwater are contaminated due to historical drum recycling and reclamation activities at the Lafarge property.	Medium	Ecology		
A16.07.00	Environmental Sampling	RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)	Lafarge North America Inc. Seattle	16001	2132	Request Lafarge to collect additional seep samples to better characterize groundwater being discharged into the LDW. Seep samples will be analyzed for sediment COCs, including PCBs.	Medium	Ecology		
A16.09.00	Information Request	RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)	Lafarge North America Inc. Seattle	16001	2132	Request Lafarge to provide additional information about the composition of material behind the bulkhead and whether or not bulkhead repairs were completed during 2006.	Medium	Ecology		
A17.05.00	Environmental Sampling	RM 1.3-1.6 West (Glacier Bay)	Alaska Marine Lines	17001	17126	Sample groundwater along shoreline to determine whether residual site contaminants are being discharged to Glacier Bay.	Medium	Property owner/operator		
A17.06.00	Information Request	RM 1.3-1.6 West (Glacier Bay)	Alaska Marine Lines	17001	17126	Confirm location of former USTs that were removed in 1990.	Low	Property owner/operator		
A17.08.00	Source Assessment	RM 1.3-1.6 West (Glacier Bay)	Alaska Marine Lines	17001	17126	Verify that remediation associated with filling of graving dock was completed and all conditions met.	Low	Ecology		
A17.14.00	Cleanup	RM 1.3-1.6 West (Glacier Bay)	Duwamish Shipyard	17003	2071	Conduct site investigations as specified in the Agreed Order Statement of Work.	High	Property owner/operator	In Progress	In 2019 the Public Review Draft RI Report was submitted and. PLPs worked on the Draft FS.

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A17.15.00	Cleanup	RM 1.3-1.6 West (Glacier Bay)	Duwamish Shipyard	17003	2071	Review site investigation results and assess potential for sediment recontamination and need for remedial actions.	High	Ecology	In Progress	In 2019 the Public Review Draft RI Report was submitted and. PLPs worked on the Draft FS.
A17.21.00	Cleanup	RM 1.3-1.6 West (Glacier Bay)	Glacier Northwest	17004	23881883	Review site investigation results and assess potential for sediment recontamination and need for remedial actions.	High	Ecology	In Progress	In 2019 Ecology reviewed the draft RI and worked with the PLP to complete the RI and move forward with the FS.
A17.29.00	BMP Implementation	RM 1.3-1.6 West (Glacier Bay)	Chemithon	17002	41953656	Prepare and/or update the SWPPP and processes to ensure that site activities do not result in transport of contaminants to the LDW.	Low	Property owner/operator		
A17.38.00	Cleanup	RM 1.3-1.6 West (Glacier Bay)	N Terminal 115 (Former MRI Corporation)	17006	2177	Conduct Remedial Investigation as specified in Agreed Order No. 8099.	Medium	Port of Seattle	In Progress	Draft RI Report submitted to Ecology in October 2017.
A18.01.00	Data Evaluation	RM 1.6-2.1 West (Terminal 115)	SW Kenny Street SD/POS SD 6132/Terminal 115 CSO (Outfall 2127)	NA	NA	Identify and evaluate potential sources of the sediment COCs reported above screening values in storm drain structures within the SW Kenny Street SD basin.	Medium	SPU, Ecology	In Progress	SPU cleaned the entire system in 2017. The near end-of-pipe sediment trap was retrieved in 2018. BEHP (2.98 mg/kg DW and benzyl alcohol (0.19 mg/kg DW) are the only chemicals that exceeded CSL post cleaning . Samples are collected annually and results are uploaded to EIM.
A18.02.00	Data Evaluation	RM 1.6-2.1 West (Terminal 115)	Highland Park Way SW SD/POS 6162 (Outfall 2125)	NA	NA	Identify and evaluate potential sources of the sediment COCs reported above screening values in storm drain structures within the Highland Park Way SW SD basin.	Medium	SPU, Ecology	In Progress	SPU cleaned the Highland Park Way SW SD system in 2015 and will continue to maintain 2 sediment traps in this system (Outfall 2125). Of the 3 sediment trap samples collected in 2018, 2 exceeded the screening level for TPH-oil; 2 exceeded the CSL for zinc, 1 for benzoic acid, and 3 for benzyl alcohol.
A18.03.00	Data Evaluation	RM 1.6-2.1 West (Terminal 115)	Highland Park Way SW SD/POS 6162 (Outfall 2125)	NA	NA	Review data from storm drain solids samples collected upgradient of Outfall 2125 in April and October 2010 and May 2011, and data from sand cover samples collected from the clean sand cover placed on the maintenance dredged area in Berth 1, to evaluate the potential for sediment recontamination.	Medium	Ecology, Port of Seattle		
A18.04.00	Data Evaluation	RM 1.6-2.1 West (Terminal 115)	West Michigan CSO (Outfall 2506)	NA	NA	Evaluate the 2009 King County effluent discharge data to assess whether the effluent discharges from the West Michigan CSO represent a potential source of contaminants to the sediments near the Terminal 115 source control area.	Medium	Ecology		Sediment traps within combined sewer collection system within this basin were installed in 2019, to be retrieved in 2020.
A18.05.00	Data Evaluation	RM 1.6-2.1 West (Terminal 115)	Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146)	18014	4040072	Review data from storm drain solids samples collected up gradient of Outfalls 2123, 2124, and 2220 in April and October 2010 and May 2011; storm drain solids samples collected up gradient of Outfall 2128 in September 2011; and data from sand cover samples collected from the clean sand cover placed on the maintenance dredged area in Berth 1 to evaluate the potential for sediment recontamination.	Medium	Ecology, Port of Seattle		
A18.06.00	Environmental Sampling	RM 1.6-2.1 West (Terminal 115)	Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146)	18014	4040072	Collect base flow samples from the portions of the Terminal 115 SD system that discharge to Outfalls 2128 and 2220 to determine if contaminants in base flow (i.e., groundwater draining into the storm drain system through French drains and groundwater drainage structures) are present at concentrations exceeding Washington State Water Quality Standards (WAC 173-201A) and/or the draft groundwater-to-sediment screening levels.	Medium	Port of Seattle		
A18.07.00	Cleanup	RM 1.6-2.1 West (Terminal 115)	Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146)	18014	4040072	Negotiate an Agreed Order with the Port, to include Terminal-wide investigations to characterize the nature and extent of potential COC sources in fill material, soil, groundwater, and stormwater at Terminal 115, including specific areas identified in the Terminal 115 SCAP.	High	Ecology, Port of Seattle	In Progress	Ecology and the PLPs (Port of Seattle and Boeing) have completed MTCA Agreed Order negotiations to perform an RI/FS/CAP, and are expecting to sign the Order by the end of 2020.

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Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A18.10.00	BMP Implementation	RM 1.6-2.1 West (Terminal 115)	Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146)	18014	4040072	Perform a video inspection of storm drain lines to identify areas where groundwater infiltrates the storm drain system.	High	Port of Seattle		
A18.11.00	Information Request	RM 1.6-2.1 West (Terminal 115)	Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146)	18014	4040072	Provide information regarding discharges to the deck drains north of Berth 1 to Ecology. Information to be provided will include, at minimum, a description of BMPs employed to prevent pollution of the stormwater runoff that is conveyed to the deck drains.	High	Port of Seattle		
A18.20.00	Inspection	RM 1.6-2.1 West (Terminal 115)	Seattle Engineering Department Penn Yard	18012	NA	Perform a property inspection to determine current use of the property and determine if stormwater and/or spills may be conveyed to the LDW via sheet flow or groundwater discharge.	Medium	Ecology		
A18.21.00	Information Request	RM 1.6-2.1 West (Terminal 115)	Seattle Engineering Department Penn Yard	18012	NA	Request information from the City of Seattle Engineering Department regarding historical operations performed by the department to determine if operations may have resulted in releases of contaminants to soil and/or groundwater.	Medium	Ecology		
A18.22.00	Information Request	RM 1.6-2.1 West (Terminal 115)	Former Foss Environmental Services	18006	36326474	Request additional information regarding the status of the utility-owned pad-mounted electrical transformer from Haslund MP to determine if it remains at the property, and if so, to determine if it contains PCB-bearing fluid.	Medium	Ecology		
A18.23.00	Information Request	RM 1.6-2.1 West (Terminal 115)	Former Foss Environmental Services	18006	36326474	Request additional information from Haslund MP to determine the locations of storm drain lines on the former Foss Environmental property.	Medium	Ecology		
A18.25.00	Environmental Sampling	RM 1.6-2.1 West (Terminal 115)	Former Foss Environmental Services	18006	36326474	Request that Haslund MP perform an environmental investigation to characterize the nature and extent of potential sediment COCs in soil and groundwater beneath the property. Soil and groundwater contamination may be present due to historical operations by Boeing.	High	Ecology		
A18.27.00	Records Review	RM 1.6-2.1 West (Terminal 115)	Catholic Printery	18003	14533	Review the April 2010 local source control inspection report to determine if there is a potential for sediment recontamination via the stormwater pathway.	Medium	Ecology		
A19.01.00	Information Request	RM 2.1 West (1st Avenue S SD)	1st Avenue S Bridge Drains (Outfalls 2505, 2507, 2510, 2512)	NA	NA	Request additional information from WSDOT regarding the quantity and quality of stormwater and solids discharged to the LDW through the bridge drains.	High	Ecology		
A19.02.00	Information Request	RM 2.1 West (1st Avenue S SD)	1st Avenue S Storm Drain System	NA	NA	Request additional information on the configuration of pipes and drainage ditches in this area from WSDOT to support identification of potential contaminant sources to the 1st Avenue SD.	Low	Ecology		
A19.03.00	Information Request	RM 2.1 West (1st Avenue S SD)	1st Avenue S Engineered Wetlands	NA	NA	Request information regarding monitoring and maintenance of the engineered wetlands in the 1st Avenue S SD source control area from WSDOT in order to assess the potential for discharge of sediment COCs from the wetlands to LDW sediment.	Medium	Ecology		
A19.04.00	Environmental Sampling	RM 2.1 West (1st Avenue S SD)	1st Avenue S Engineered Wetlands	NA	NA	Design a study to identify/evaluate sediment and water sampling locations at the confluence of the 1st Avenue S wetlands and the LDW, taking tidal fluctuations and accessibility into consideration.	Medium	Ecology		If it is determined that sediment COCs are being released, determine what measures may be necessary to mitigate contaminant release to the LDW and re-evaluate the priority of source control actions for the upland properties within the 1st Avenue S SD basin.

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Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A19.08.05	Inspection	RM 2.1 West (1st Avenue S SD)	Vista Pro Automotive	19012	96897184	Perform an evaluation to determine if the facility is required to obtain coverage under the ISGP or is eligible for a CNE certificate.	Low	Ecology		
A20.08.00	Cleanup	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Industrial Container Services	20018	2154	Evaluate the need for stormwater characterization (solids and whole water) from this facility if overflow occurs during heavy rainfall events.	Medium	Ecology/ KCIW	In Progress	To be addressed in accordance with Agreed Order No. DE-6720. All of the production areas at this site are plumbed to the sanitary sewer and are covered by a KCIW permit. Building roof drains discharge to ground. Site is lower than street, so roof runoff remains onsite. Site does not affect City MS4. KCIW is allowing contaminated stormwater to be treated and discharged to the sanitary sewer on an interim basis while RI/FS activities are being conducted.
A20.12.00	Cleanup	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Douglas Management Company	20006	97573251	Conduct cleanup as needed to eliminate sources of contaminants to EAA-2.	Medium	Property owner/operator, Ecology	In Progress	To be conducted in accordance with Agreed Order No. DE-8258. The RI Report was completed in 2019. A supplemental investigation for the draft FS is in progress.
A20.16.00	Cleanup	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Douglas Management Company	20006	97573251	If stormwater discharge to EAA-2 (including the Trotsky inlet to the south and the LDW shoreline to the north and east) is confirmed, assess the need for stormwater characterization (solids and whole water). Collect stormwater samples as needed.	Medium	Ecology/ Property owner/operator		To be addressed in accordance with Agreed Order No. DE-8258. This is direct discharge. Does not affect City MS4.
A20.19.00	Source Assessment	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	2nd Avenue S SD	NA	NA	Continue source tracing to identify sources of phthalates and other COCs.	High	SPU	In Progress	In 2010, SPU jetted and cleaned all catch basins culverts, and pipes in the street that connect to this private drainage system. SPU has collected 12 samples in this system since cleaning. Chemicals that exceeded the CSL included copper (2 samples), mercury (4 samples), zinc (4 samples), TPH-oil (10 samples), cPAH (1 sample), BEHP (11 samples), other phthalates, PCBs (1 sample), 2-methylphenol (1 sample), 4-methylphenol (2 samples), benzoic acid (4 samples), and benzyl alcohol (7 samples). A diesel truck repair facility continues to be a source of oil to this drain. SPU has issued multiple NOVs to this facility.
A20.33.02	Cleanup	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Industrial Container Services	20018	2154	Conduct RI/FS, implement interim actions (as needed), and prepare draft CAP.	Medium	Industrial Container Services	In Progress	To be conducted in accordance with Agreed Order No. DE-6720. RI Report was completed in 2019.
A20.35.00	Environmental Sampling	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Douglas Management Company	20006	97573251	Conduct groundwater sampling along the LDW shoreline to assess the potential for sediment recontamination via groundwater transport.	Medium	Ecology		To be addressed in accordance with Agreed Order No. DE-8258. The RI Report was completed in 2019. Shoreline groundwater samples have been collected from three wells; data is included in the RI Report. Supplemental sampling for the FS is in progress.
A20.36.00	Data Evaluation	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Boyer Towing	20002	15947, 37926748	Review source tracing data collected by SPU for the 2nd Avenue S storm drain basin to identify whether the Boyer Towing owned or leased parcels are a potential source of contaminants to the Trotsky Inlet and the LDW.	Medium	Ecology	In Progress	Preliminary review indicates phthalates and metals may be present at elevated concentrations.
A20.36.01	Source Assessment	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Boyer Towing	20002	15947, 37926748	Determine if additional storm drain samples are needed.	Medium	Ecology		If connected, Boyer properties along 2nd Ave S would tie into the privately-owned 2nd Ave S SD system. Site does not affect City MS4.
A20.37.00	Information Request	RM 2.1-2.2 West (EAA-2: Trotsky Inlet)	Boyer Towing	20002	15947, 37926748	Request additional data regarding potential soil contamination at Parcels F and G; evaluate the need for additional characterization.	Medium	Ecology		Action item identified in Supplemental Data Gaps Report.
A21.01.00	Source Assessment	RM 2.2-3.4 West (Riverside Drive)	7th Avenue S SD Outfall (Outfall 2112)	NA	NA	Continue source tracing to identify potential sources of the sediment COCs reported above screening levels in storm drain structures in the 7th Avenue S SD basin.	Medium	SPU, Ecology	In Progress	SPU jetted and cleaned the entire 7th Ave S SD system in 2013 and continues to operate 3 sediment traps in this basin. SPU collected 13 trap samples between 2014 and 2018. Chemicals exceeding a CSL included cPAH (1 sample), BEHP (7 samples), dimethylphthalate (1 sample), 4-methylphenol (1 sample), benzoic acid (5 samples), and benzyl alcohol (10 samples). TPH-oil also exceeded the screening level (4 samples).

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A21.03.00	Inspection	RM 2.2-3.4 West (Riverside Drive)	Private Outfalls (Outfalls 2106, 2108, and 2113)	NA	NA	Conduct an inspection during a storm event to determine if the three unresolved outfalls (Outfalls 2106, 2108, and 2113) are operational or have been abandoned.	Medium	SPU	In Progress	Outfall 2113 is the City's S Webster Street SD. This outfall serves one catch basin located on S Riverside Dr. SPU sampled this CB in 2016. LPAH, HPAH, and BEHP exceeded the CSL. SPU will clean this CB in 2020. Outfall 2106 is an abandoned 24" pipe that is full of sediment and no longer functional. Outfall 2107 is no longer visible along the shoreline. SPU will double check during a low tide to confirm.
A21.04.00	Source Assessment	RM 2.2-3.4 West (Riverside Drive)	Private Outfalls (Outfalls 2106, 2108, and 2113)	NA	NA	If discharge from these outfalls is observed, conduct dye testing to determine if storm drain lines are connected to the unresolved outfalls, and delineate the associated drainage areas.	Medium	Property Owners		Outfall 2113 is the City's S Webster Street SD. This outfall serves one catch basin located on S Riverside Dr. Outfalls 2106 and 2108 remain unresolved.
A21.07.00	Information Request	RM 2.2-3.4 West (Riverside Drive)	Independent Metals Plant 2	21032	16139	Request drainage information from Independent Metals or the current operator at this property for Outfalls 2109 and 2111 to determine if the outfalls are operational and to identify the drainage areas associated with the outfalls, if any.	High	Ecology		Independent Metals Plant 2 is no longer in business. Silver Bay Logging is the current operator. The site is on the CSCSL and is awaiting cleanup.
A21.08.00	Inspection	RM 2.2-3.4 West (Riverside Drive)	Former Long Painting – 10th Avenue S Facility	21036	71678662	Perform a facility inspection at Unity Electric to verify compliance with applicable regulations and BMPs.	Medium	SPU, King County		All of the commercial parcels are in the City of Seattle and drain to the combined sewer system. The parcels in King County are either residential or vacant.
A21.09.00	Information Request	RM 2.2-3.4 West (Riverside Drive)	American Civil Constructors Barge Removal Ramp	20002	NA	Request American Civil Constructors to provide information about the fill used for a barge removal ramp, to determine if the fill is a potential source of contaminants to adjacent sediments.	High	EPA, USACE		
A21.13.00	Inspection	RM 2.2-3.4 West (Riverside Drive)	Olympic Steel Door	21050	45787437	Request Olympic Steel Door, Redox, and All Metal Arts to obtain coverage under the ISGP or apply for a CNE.	Low	Ecology		
A21.17.00	Environmental Sampling	RM 2.2-3.4 West (Riverside Drive)	Independent Metals Plant 1	21030	9309618	Request Independent Metals to obtain environmental data to determine if soil and groundwater is contaminated by metals from recycling operations and if COCs in soil and groundwater may be transported to the LDW.	Medium	Ecology		Independent Metals Plant 1 is on the CSCSL and is awaiting cleanup with confirmed PCB contamination in soil and groundwater.
A22.01.01	Environmental Sampling	RM 3.4-3.8 West (EAA-5: Terminal 117)	Adjacent Streets/Dallas Ave.	NA	NA	Continue monitoring of storm drain solids	High	SPU, Port of Seattle	In Progress	City of Seattle and Port of Seattle completed the long term maintenance and monitoring plan for EPA in 2018. Long term monitoring of storm drain solids near the outfall to be conducted as part of Seattle's SCIP. SPU installed a sediment trap in the downstream-most MH on the 17th Ave S SD in 2017. The trap was retrieved in 2018 but insufficient material had accumulated to allow chemical analysis. SPU collected 5 stormwater samples from the underdrains in one bioretention cell and one Filterra unit in 2018 to assess condition of the filter media. PCBs were not detected at 0.01 ug/L in any samples. Next round of underdrain sampling is scheduled for 2021.
A22.05.00	Source Assessment	RM 3.4-3.8 West (EAA-5: Terminal 117)	South Park Marina	22003	44653368	Investigate sewer connections and discharge locations of storm drains and catch basins.	Low	Ecology		Site maps show two outfalls from South Park Marina facility to the LDW; only one is identified in the facility's NPDES permit. To be addressed in accordance with Agreed Order No. DE-16185 (signed April 2019).
A23.06.00	Information Request	RM 3.8-4.2 West (Sea King Industrial Park)	Sea King Industrial Park	23038	NA	Sea King Industrial Park is not located within the S 96th Street SD basin, but discharges to a creek along S Director Street. Request information from the property owner regarding stormwater drainage features to evaluate the potential for contaminant transport to the LDW via stormwater discharge.	Low	Ecology		
A23.08.00	Information Request	RM 3.8-4.2 West (Sea King Industrial Park)	Sea King Industrial Park	23038	NA	Request information from the property owner regarding historical tenant operations to determine the potential for soil and/or groundwater contamination beneath the property.	Low	Ecology		

Table B-2. Incomplete Action Items

Action Item No.	Action Item Category	Source Control Area	Property/ Facility/ Outfall	Property Number	Facility/ Site ID	Action Item	Priority	Responsible Party	Status	Comments/Follow-On Actions
A23.09.00	Inspection	RM 3.8-4.2 West (Sea King Industrial Park)	KRS Marine	23024	90355185	Facility is adjacent to the LDW. Perform a source control inspection to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.	Low	Ecology		King County investigated KRS Marine on 4/19/19 and 7/16/19 and found the facility had made improvements in labeling, record keeping and portable secondary containment.
A24.01.00	Information Request	RM 4.2-5.8 West (Restoration Areas)	Hamm Creek SD Basin	NA	NA	Request additional information from King County and the Cities of Burien and SeaTac to define the boundaries of the Hamm Creek SD basin in order to determine if the area to the east of Des Moines Memorial Drive between S 116th Way and S 124th Street and the area south of S 124th Street should be included in or excluded from the Restoration Areas source control area.	Medium	Ecology	In Progress	Based on Figure 3-3 in King County's Source Control Implementation Plan, the area in question is within the city of Burien.
A24.02.00	Information Request	RM 4.2-5.8 West (Restoration Areas)	Outfall 3842	NA	NA	Request additional information from the City of Tukwila to determine the drainage area associated with Outfall 3842.	Medium	Ecology		
A24.04.00	Environmental Sampling	RM 4.2-5.8 West (Restoration Areas)	Seattle City Light Power Substation	24021	17593	Request that SCL perform an environmental assessment to address the potential arsenic, mercury, benzo(a)pyrene, and BEHP contamination in fill material.	Medium	Ecology		
A24.05.00	Inspection	RM 4.2-5.8 West (Restoration Areas)	Boeing Parking Lot Property	24004	NA	Perform a source control inspection to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW.	Low	Ecology		
A24.08.00	Environmental Sampling	RM 4.2-5.8 West (Restoration Areas)	USPS Seattle Distribution Center	24025	NA	Request that the Sabey Corporation collect groundwater data to assess the current concentrations of metals in groundwater beneath the property.	Low	Ecology		
A24.09.00	Records Review	RM 4.2-5.8 West (Restoration Areas)	USPS Seattle Distribution Center	24025	NA	Review the cleanup records associated with Atlas Demolition to assess the potential for sediment recontamination via the groundwater discharge pathway.	Low	Ecology		

Appendix C:
SPU Source Control Inspections (2019)

Appendix C
SPU Source Control Inspections - 2019

Facility	Address	Date Inspected	Inspection Type	Corrective Actions					
				Total	HW	IW	SP	SW	Rank
Upper Reach									
RM 4.9 East (EAA-7: Norfolk CSO/SD)									
Chen Bao C & Qiao	9637 Martin Luther King Jr Way S	4/30/2019	Initial	2			2		Low
Classic Foundry LLC	9688 Martin Luther King Jr Way S	8/13/2019	Initial	0					Medium
Diesel Dudes	9650 Martin Luther King Jr Way S	4/30/2019	Initial	1			1		Medium
Diversification Inc.	9877 40th Avenue S	5/8/2019	Initial	1				1	Low
		6/4/2019	Follow Up	0					Medium
		6/4/2019	Initial	0					
Fairn & Swanson Inc.	9875 40th Avenue S	5/2/2019	Initial	4			1	3	Medium
		6/4/2019	Follow Up	0					
Guardian Towing	9650 Martin Luther King Jr Way S	4/30/2019	Initial	2			2		Medium
MacDonald-Miller Facility Solutions Inc	3701 S Norfolk Street	9/19/2019	Initial	3	1		1	1	High
		10/21/2019	Follow Up	0					
MV Public Transportation Inc.	9833 40th Avenue S	9/25/2019	Initial	0					Medium
Nelson Trucking Co Inc.	9747 Martin Luther King Jr Way S	9/20/2019	Initial	0					Medium
Noble Wines LTD	9860 40th Avenue S	9/20/2019	Initial	1			1		Low
Pacific Truck School LLC	9842 Martin Luther King Jr Way S	8/15/2019	Initial	0					Low
Pape Material Handling Inc.	9892 40th Avenue S	5/13/2019	Initial	2				2	High
		5/22/2019	Follow Up	0					
Transportation Demand Management Inc.	9801 Martin Luther King Jr Way S	8/22/2019	Initial	3	1			2	Medium
Unified Grocers Inc.	3301 S Norfolk Street	1/15/2019	Initial	0					None
RM 3.8-4.2 West (Sea King Industrial Park)									
King Electrical Mfg. Company	821 S Barton Street	12/9/2019	Initial	5	1		2	2	High
Middle Reach									
RM 2.8 East (EAA-3: Slip 4)									
Aero Motel Inn	7240 East Marginal Way S	3/22/2019	Initial	1			1		Low
CUMMINGS ROBERT P	2211 S Eddy Street	7/9/2019	Initial	0					Low
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)									
Brother's Automotive	719 S Myrtle Street	10/18/2019	Initial	4	1		1	2	Medium
GOGOCAMPER LLC	719 S Myrtle Street	3/7/2019	Initial	2			1	1	Medium

Appendix C
SPU Source Control Inspections - 2019

Facility	Address	Date Inspected	Inspection Type	Corrective Actions					
				Total	HW	IW	SP	SW	Rank
MBG Unlimited LLC	719 S Myrtle Street	3/7/2019	Initial	3			1	2	Medium
Seattle Boiler Works Inc.	500 S Myrtle Street	8/28/2019	Initial	1	1				Medium
		11/25/2019	Follow Up	0					
United Rentals Trench Safety - 7135 8th Ave S	7135 8th Avenue S	2/20/2019	Initial	1				1	Medium
		3/7/2019	Follow Up	0					
United Rentals Trench Safety - 765 S Myrtle St	765 S Myrtle Street	2/22/2019	Initial	0					Medium
RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)									
Commercial Floor Distributors Inc	210 S River Street	3/25/2019	Initial	0					Low
Madison Tracy	500 S River Street	9/16/2019	Initial	0					Low
Ribhi Faraj	6722 Fox Avenue S	5/8/2019	Initial	1	1				Medium
Seatac Marine Services LLC	6701 Fox Avenue S	9/16/2019	Initial	1				1	High
		10/10/2019	Follow Up	0					
RM 1.7-2.0 East (Slip 2 to Slip 3)									
General Biodiesel Seattle LLC	6333 1st Avenue S	6/13/2019	Initial	6	1		1	4	High
		8/1/2019	Follow Up	0					High
		9/13/2019	Follow Up	0					High
		43804.5625	Follow Up	0					High
RM 2.2-3.4 West (Riverside Drive)									
Cain Bolt and Gasket Inc.	7724 7th Avenue S	10/18/2019	Initial	0					Medium
Fabrication Specialties Ltd	527 S Portland Street	5/1/2019	Initial	0					Low
Federal Marine & Defense Services, LLC	8000 5th Avenue S	5/8/2019	Initial	0					Low
Maxim Crane Works LP	8250 5th Avenue S	6/10/2019	Initial	0					Medium
Rasmussen Equipment Company	8727 5th Avenue S	7/18/2019	Initial	0					High
Schuchart Corp.	530 S Holden Street	3/11/2019	Initial	4	1		1	2	Medium
		3/26/2019	Follow Up	0					
Sea Technology Construction Inc.	309 S Cloverdale Street	8/21/2019	Initial	0					Medium
Washington Liftruck Inc	700 S Chicago Street	7/31/2019	Initial	6	1			5	Medium
		9/6/2019	Follow Up	0					
West Coast Wire Rope & Rigging Inc	7777 7th Avenue S	5/16/2019	Initial	1				1	Medium
		6/26/2019	Follow Up	0					

Appendix C
SPU Source Control Inspections - 2019

Facility	Address	Date Inspected	Inspection Type	Corrective Actions					
				Total	HW	IW	SP	SW	Rank
RM 2.1-2.2 West (EAA-2: Trotsky Inlet)									
Alaska Marine Lines, Inc.	7100 1st Avenue S	2/1/2019	Initial	0					High
American Environmental Construction LLC	7417 4th Avenue S	3/25/2019	Initial	0					Low
Paco Ventures LLC - All Sites	7400 2nd Avenue S	6/18/2019	Initial	1				1	Medium
		9/5/2019	Follow Up	0					
Paco Ventures LLC - All Sites	7560 2nd Avenue S	6/18/2019	Initial	2				2	Medium
		9/5/2019	Follow Up	0					
Paco Ventures LLC - All Sites	7601 2nd Avenue S	6/18/2019	Initial	2				2	Medium
		9/5/2019	Follow Up	0					
RM 2.1 West (1st Avenue Bridge South)									
Flamespray Northwest Inc.	250 S Chicago Street	3/28/2019	Initial	0					Low
Non Ferrous Metal Inc.	230 S Chicago Street	4/10/2019	Initial	0					Medium
Pacific Rim Trench & Shoring	7745 1st Avenue S	2/20/2019	Follow Up	3			3		High
		4/9/2019	Follow Up	0					
		5/22/2019	Follow Up	0					
Seaproducts West Inc.	7937 2nd Avenue S	7/23/2019	Initial	2			1	1	Medium
Standard Steel Fabricating Co. Inc.	8155 1st Avenue S	1/28/2019	Initial	0					Medium
Tnemec Co. Inc.	7929 2nd Avenue S	7/1/2019	Initial	0					Low
RM 1.6-2.1 West (Terminal 115)									
A & E Auto Repair and Sales LLC	7902 9th Avenue S	1/4/2019	Initial	0					Medium
Krueger Sheet Metal Co.	6515 West Marginal Way SW	1/15/2019	Initial	5	1		1	3	Medium
		2/20/2019	Follow Up	0					
National Products Inc.	9243 10th Avenue S	8/9/2019	Initial	0					Low
Northland Services Inc.	6700 West Marginal Way SW	2/1/2019	Initial	2	1			1	High
Pacific Plumbing Supply Co. LLC	7115 West Marginal Way SW	1/15/2019	Initial	4	1			3	Medium
		2/6/2019	Follow Up	0					
Lower Reach									
RM 1.2-1.7 East (St. Gobain to Glacier Northwest)									
Ardagh Glass Inc	5801 East Marginal Way S	5/3/2019	Initial	6				6	High
		6/13/2019	Follow Up	0					

Appendix C
SPU Source Control Inspections - 2019

Facility	Address	Date Inspected	Inspection Type	Corrective Actions					
				Total	HW	IW	SP	SW	Rank
Certainteed Gypsum	5931 East Marginal Way S	11/18/2019	Initial	0					High
RM 0.9-1.0 East (Slip 1)									
Manson Construction Co	5053 East Marginal Way S	9/26/2019	Initial	0					Low
Manson Construction Co	5209 East Marginal Way S	9/26/2019	Initial	1			1		Medium
		10/15/2019	Follow Up	0					Low
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)									
Active Environmental Inc	4001 16th Avenue SW	1/28/2019	Initial	1	1				Low
		3/14/2019	Follow Up	0					
Alaskan Copper Companies Inc. - 3200 6th Ave S	3200 6th Avenue S	4/12/2019	Initial	0					Medium
Alaskan Copper Companies Inc. - 3300 6th Ave S	3300 6th Avenue S	4/12/2019	Initial	0					Medium
Alaskan Copper Companies Inc. - 3405 6th Ave S 1E	3405 6th Avenue S	4/12/2019	Initial	0					Medium
Amazon.com - 2646 Rainier Ave S	2646 Rainier Avenue S	2/25/2019	Initial	0					Low
Applied Industrial Technologies Inc.	4021 6th Avenue S	3/25/2019	Initial	0					Low
Arrows Automotive LLC	3922 7th Avenue S	1/14/2019	Initial	1			1		Medium
Bijou Renued LLC	3431 Airport Way S	8/27/2019	Initial	0					Low
Blaine Memorial United Methodist Church	3001 24th Avenue S	9/10/2019	Initial	0					Low
Borracchini Foods Inc - 2001 S Plum Street	2001 S Plum Street	10/21/2019	Initial	0					Medium
Buck & Buck Inc.	3111 27th Avenue S	3/20/2019	Initial	0					Low
Burger Management Systems Washington Inc. - 2543 Rainier Ave S	2543 Rainier Avenue S	7/12/2019	Initial	3			2	1	Medium
		9/5/2019	Follow Up	0					
Buzzini Phyllis L.	3429 Airport Way S	5/14/2019	Initial	0					Low
Cascade Designs - All Sites	4000 1st Avenue S	5/9/2019	Initial	0					Low
Catholic Community Services of King County - 100 23rd Ave S	100 23rd Avenue S	1/18/2019	Follow Up	0					Low
Costco Wholesale Corp	4401 4th Avenue S	11/21/2019	Initial	5			1	4	Medium
		12/26/2019	Follow Up	0					
D.P. Nicoli Inc	3700 6th Avenue S	5/22/2019	Initial	7				7	Medium
		6/26/2019	Follow Up	0					
		7/30/2019	Follow Up	0					High
Dere Auto Inc - 1818 Rainier Ave S	1818 Rainier Avenue S	2/25/2019	Initial	0					Medium

Appendix C
SPU Source Control Inspections - 2019

Facility	Address	Date Inspected	Inspection Type	Corrective Actions					
				Total	HW	IW	SP	SW	Rank
Downtown Emergency Service Center	606 12th Avenue S	8/13/2019	Initial	4			1	3	Low
		9/19/2019	Follow Up	0					
DT OF SEATTLE II LLC	838 Poplar Place S	8/22/2019	Initial	1			1		Medium
Emerald City Pet Rescue	20 S Idaho Street	7/23/2019	Initial	1			1		Low
Evoqua Water Technologies LLC	601 S Snoqualmie Street	3/25/2019	Initial	0					Low
FSI Inc	4601 6th Avenue S	3/22/2019	Initial	0					Low
Gary Merlino Construction Co. - 3301 6th Ave S	3301 6th Avenue S	8/7/2019	Initial	0					Low
Great Western Pacific Inc - 14 S Idaho St	14 S Idaho Street	6/11/2019	Initial	6	1			5	High
		7/24/2019	Follow Up	0					
		8/9/2019	Follow Up	0					
		9/26/2019	Follow Up	0					Medium
Groove City Grind LLC	3100 Airport Way S	8/29/2019	Initial	2			2		Low
Herc Rentals Inc - 5055 4th Ave S	5055 4th Avenue S	5/14/2019	Initial	2				2	Medium
		6/11/2019	Follow Up	0					
Hermanson Company LLP	3301 6th Avenue S	8/7/2019	Initial	1			1		Low
Hui-Intertrading Inc.	2100 22nd Avenue S	10/18/2019	Initial	0					Medium
ICLICK Inc.	3931 1st Avenue S	5/29/2019	Initial	3			1	2	Medium
		6/28/2019	Follow Up	0					
Johnson & Barrow Inc.	2202 22nd Avenue S	1/16/2019	Follow Up	0					Low
Kawabe Memorial House	221 18th Avenue S	9/16/2019	Initial	1			1		Low
Lantern Press LLC	4225 2nd Avenue S	5/13/2019	Initial	1			1		Low
Lee Sang H	3002 Beacon Avenue S	1/23/2019	Follow Up	0					Low
		3/5/2019	Follow Up	0					
MacMillan Piper Inc. - 655 S Edmunds St	655 S Edmunds Street	7/29/2019	Initial	0					Medium
Mercer Distribution Services LLC	4050 East Marginal Way S	10/17/2019	Initial	0					Medium
Mutual Fish Co. Inc. - 2335 Rainier Avenue S	2335 Rainier Avenue S	2/25/2019	Initial	0					Low
Nikkei Concerns	1601 E Yesler Way	6/5/2019	Initial	2			1	1	Low
		8/8/2019	Follow Up	0					
North Star Casteel - 820 S Bradford St	820 S Bradford Street	5/14/2019	Initial	3				3	Medium
		6/12/2019	Follow Up	0					

Appendix C
SPU Source Control Inspections - 2019

Facility	Address	Date Inspected	Inspection Type	Corrective Actions					
				Total	HW	IW	SP	SW	Rank
Nova Oil Company	2801 Martin Luther King Jr Way S	8/22/2019	Initial	1				1	Medium
Olympic Foundry 1984 Inc.	5200 Airport Way S	8/13/2019	Initial	0					Low
Pacific Auto Body - 3400 6th Ave S - South	3400 6th Avenue S	8/7/2019	Initial	0					Low
Pacific Auto Body - 3405 6th Ave S #2E	3405 6th Avenue S	8/7/2019	Initial	0					Medium
Pacific Publishing Company Inc.	636 S Alaska Street	7/2/2019	Initial	0					Low
Paramount Rehabilitation & Nursing LLC	2611 S Dearborn Street	7/12/2019	Initial	1			1		Low
Pedersen's Event Rentals LLC	4500 4th Avenue S	8/8/2019	Initial	1			1		Medium
Pratt Fine Arts Center	1902 S Main Street	3/25/2019	Initial	5			1	4	High
		6/5/2019	Follow Up	0					Medium
		7/30/2019	Follow Up	0					High
Puget Sound Solar	805 Rainier Avenue S	10/17/2019	Initial	3			1	2	Low
		12/3/2019	Follow Up	0					
Ralph's Concrete Pumping - All sites	840 Poplar Place S	8/22/2019	Initial	0					Medium
Refrigeration Supplies Distributor Total Control	625 S Industrial Way	6/12/2019	Initial	1				1	Low
		8/9/2019	Follow Up	0					
Rob Finlon Inc.	3317 6th Avenue S	8/7/2019	Initial	1			1		Low
Santa Cruz Bros Corp	2500 Beacon Avenue S	3/25/2019	Initial	0					Low
Seaself Storage LLC	1100 Poplar Place S	1/10/2019	Follow Up	0					Low
Seattle Central College - 2310 S Lane Street	2310 S Lane Street	7/18/2019	Initial	0					Medium
Seattle City Light - South Service Center - 3613 4th Ave S	3613 4th Avenue S	6/12/2019	Initial	6	1		2	3	High
		8/7/2019	Follow Up	0					
Seattle Collision Center Inc	1752 Rainier Avenue S	6/5/2019	Initial	0					Medium
Seattle Goodwill Industries - 1400 S Lane Street	1400 S Lane Street	2/1/2019	Initial	3				3	High
		3/6/2019	Follow Up	0					
Seattle Granite Countertops Inc	4700 Ohio Avenue S	6/6/2019	Initial	0					Low
Seattle Lighthouse for the Blind Foundation	2501 S Plum Street	8/16/2019	Initial	0					High
Seattle Nissan Inc	3400 Airport Way S	7/2/2019	Initial	3			3		Medium
		9/6/2019	Follow Up	0					
Seattle Parks Dept - Pratt Park	1902 S Main Street	3/25/2019	Initial	2				2	Medium
		8/28/2019	Follow Up	0					High

Appendix C
SPU Source Control Inspections - 2019

Facility	Address	Date Inspected	Inspection Type	Corrective Actions					
				Total	HW	IW	SP	SW	Rank
Seattle Radiator LLC	5011 Ohio Avenue S	6/3/2019	Initial	2			1	1	High
		6/28/2019	Follow Up	0					
Second Use Building Materials Inc.	3223 6th Avenue S	5/9/2019	Initial	1				1	Medium
		6/18/2019	Follow Up	0					
Seltzery LLC	3849 1st Avenue S	6/18/2019	Initial	1			1		Medium
Shortround Corp.	5200 Denver Avenue S	3/25/2019	Initial	4			2	2	Medium
		5/21/2019	Follow Up	0					High
Skeeter's Auto Rebuild, Inc.	2104 S Plum Street	6/5/2019	Initial	0					Medium
Standard Brewing LLC	2504 S Jackson Street	5/8/2019	Initial	0					Medium
Stewart Industries Inc	16 S Idaho Street	7/11/2019	Initial	4			1	3	Medium
		8/9/2019	Follow Up	0					
Stewart Lumber Co.	1761 Rainier Avenue S	6/5/2019	Initial	1			1		Low
Structure Cellars LLC	3849 1st Avenue S	5/29/2019	Initial	0					Low
TEK Machining Inc.	4770 Ohio Avenue S	6/11/2019	Initial	0					None
The Dog Resort LLC - 629 S Industrial Way	629 S Industrial Way	1/9/2019	Follow Up	0					High
		1/14/2019	Follow Up	0					
		5/23/2019	Initial	0					Medium
Transmission Warehouse LLC	4750 Airport Way S	8/9/2019	Initial	0					None
UAF INC	3429 Airport Way S	6/18/2019	Initial	3			2	1	Low
U-Haul Co of Washington - 2515 Rainier Ave S	2515 Rainier Ave S	5/8/2019	Initial	1			1		Low
Union Pacific Railroad Company - 402 S Dawson St	402 S Dawson St	2/21/2019	Initial	4	1			3	High
		3/22/2019	Follow Up	0					
United Parcel Service - 4455 7th Ave S	4455 7th Avenue S	6/10/2019	Initial	0					High
United States Bakery Inc. - 2006 S Weller St	2006 S Weller Street	8/30/2019	Initial	1				1	Medium
		9/4/2019	Follow Up	0					
University of Washington Consolidated Laundry	2901 27th Avenue S	6/5/2019	Initial	0					None
Victor's Granite & Marble LLC	4660 East Marginal Way S	5/20/2019	Initial	1			1		Medium
Washington Asian Pacific Islander	861 Poplar Place S	7/12/2019	Initial	0					Low
Washington Middle School	2101 S Jackson Street	6/25/2019	Initial	3			1	2	Low
		10/3/2019	Follow Up	0					

Appendix C
SPU Source Control Inspections - 2019

Facility	Address	Date Inspected	Inspection Type	Corrective Actions					
				Total	HW	IW	SP	SW	Rank
Western Peterbilt LLC	3707 Airport Way S	8/23/2019	Initial	0					Medium
RM 1.3-1.6 West (Glacier Bay)									
Alaska Marine Lines Inc. - 5600 West Marginal Way SW	5600 West Marginal Way SW	2/21/2019	Initial	1	1				High
Alaska Marine Lines Inc. - 5615 West Marginal Way SW	5615 West Marginal Way SW	2/21/2019	Initial	0					High
RM 0-1.0 West (Spokane Street to Kellogg Island)									
Ferguson Enterprises Inc	4100 West Marginal Way SW	8/13/2019	Initial	2				2	Medium
		10/2/2019	Follow Up	0					
Heath Landscape Services Inc	4849 West Marginal Way SW	8/12/2019	Initial	0					Medium
Pacifica Marine Inc.	4233 West Marginal Way SW	1/28/2019	Initial	0					Low
Seattle Parks Dept - Westbridge Maintenance Facility	4209 West Marginal Way SW	2/26/2019	Initial	2	1			1	Medium
		3/26/2019	Follow Up	0					
Sequential Environmental Services LLC	4034 West Marginal Way SW	4/11/2019	Initial	2	1		1		Medium
		4/15/2019	Follow Up	0					

HW = hazardous waste
IW = industrial waste
SP = spill prevention
SW = stormwater

Appendix D:
King County Control Inspections (2019)

Table D-1. King County Industrial Waste Inspections in LDW Basin (2019)

Facility	Authorization Type	Authorization Number	Inspection Date	CSO Basin
Industrial Container Services - WA LLC	Permit	7929-01	3/21/2019	8th Avenue
Kerry, Inc.	Discharge Authorization or Miscellaneous Inspection	7854-02	8/8/2019	8th Avenue
Kerry, Inc.	Permit	7854-02	11/8/2019	8th Avenue
Machinists, Inc. Plant 5	Permit	7892-03	8/13/2019	8th Avenue
Magnetic and Penetrant Services Co.	Permit	7873-03	10/4/2019	8th Avenue
National Products Inc.	Permit	7834-03	2/25/2019	8th Avenue
Washington Liftruck	Discharge Authorization or Miscellaneous Inspection	806-02	7/17/2019	8th Avenue
Art Brass Plating Inc.	Permit	7722-06	5/20/2019	Brandon
General Electric Co. - Dawson Street	Discharge Authorization or Miscellaneous Inspection	543-04	7/11/2019	Brandon
Auto-Chlor System	Discharge Authorization or Miscellaneous Inspection	4428-02	12/13/2019	Duwamish East
ConGlobal Industries Inc.	Discharge Authorization or Miscellaneous Inspection	932-01	3/12/2019	Duwamish East
Seattle Barrel Co.	Permit	7113-04	3/18/2019	Duwamish East
Lafarge - Seattle Plant	Discharge Authorization or Miscellaneous Inspection	7925-02	7/8/2019	Duwamish West
Lafarge - Seattle Plant	Permit	7925-01	6/20/2019	Duwamish West
Boeing Company - Plant 2 Facility	Permit	7811-04	11/7/2019	E Marginal
Container Properties LLC	Discharge Authorization or Miscellaneous Inspection	4167-02	1/16/2019	E Marginal
Boeing Commercial Airplane - North Field	Permit	7594-06	9/6/2019	E Marginal or Michigan
Franz-Gai's Bakery - Weller St.	Discharge Authorization or Miscellaneous Inspection	4296-01	4/3/2019	Hanford #1
Rainier Commons LLC - Old Rainier Brewery Site	Permit	7927-01	6/13/2019	Hanford #1
Sound Transit Operations and Maintenance Facility	Discharge Authorization or Miscellaneous Inspection	801-03	3/11/2019	Hanford #1
Ceradyne Inc., a 3M Company - Seattle	Discharge Authorization or Miscellaneous Inspection	7507-05	8/6/2019	Michigan
Ceradyne Inc., a 3M Company - Seattle	Permit	7507-05	11/15/2019	Michigan

Table D-1. King County Industrial Waste Inspections in LDW Basin (2019)

Facility	Authorization Type	Authorization Number	Inspection Date	CSO Basin
Elysian Brewing Company - Airport Way S.	Discharge Authorization or Miscellaneous Inspection	4211-03	8/14/2019	Michigan
First South Properties	Discharge Authorization or Miscellaneous Inspection	4472-01	3/12/2019	Michigan
King County WTD - Georgetown Wet Weather Treatment Station Construction Project	Permit	7937-02	11/25/2019	Michigan
King County WTD - Georgetown Wet Weather Treatment Station Conveyance Construction Project	Permit	7939-02	11/25/2019	Michigan
Marine Vacuum Service Inc.	Permit	7676-07	9/19/2019	Michigan
Seattle Iron and Metals Corp.	Discharge Authorization or Miscellaneous Inspection	750-03	7/25/2019	Michigan
Waste Management National Services - 8th Avenue South Reload Facility	Permit	7928-02	8/20/2019	Michigan
Seafreeze Acquisition, LLC (aka Lineage Logistics - Seattle Michigan Facility)	Permit	7896-02	9/20/2019	Terminal 115

Source: King County 2019, Table A-2 [12426]

Table D-2. King County Stormwater Services Inspections in LDW Basin (2019)

Facility Name	Address	Inspection Date	Inspection Type	Notes
RM 3.8-4.2 West (Sea King Industrial Park)				
Absolute German Autowrecking	9540 14th Avenue S	2/7/2019	Source Control	Issues with maintenance and disposal records. Referred to Ecology's Hazardous Waste & Toxics Reduction Program.
Ace Galvanizing	429 S 96th Street	1/30/2019	Source Control	Storm drains needed labeling and records kept for oil and universal waste disposal.
Aero-Lac	420 S 96th Street, Ste 11	2/27/2019 3/25/2019 8/14/2019 8/26/2019 9/9/2019	Source Control	Issues with maintenance and disposal records. Referred to Ecology's Hazardous Waste & Toxics Reduction Program.
Anmarco Yard	1110 S 96th Street	2/28/2019 3/19/2019	Source Control	Storm drains needed labeling and records kept for oil and universal waste disposal.
Graffix	1312 S 96th Street	8/1/2019	Source Control	Storm drain system cleaned and labeled. Drainage facility issues.
Beckwith & Kuffel	1313 S 96th Street	10/10/2019	Source Control	Needed to move material into secondary containment.
Boeing South Park	1420 S Trenton Street	3/12/2019	Source Control	No Issues
Cadence Winery	9320 15th Avenue S	3/25/2019	Source Control	Catch basins stenciled and drums labeled. Paint booth filters need to be designated and paint booth registered with Puget Sound Clean Air.
Former ODIN Brewing	9130 15th Place S	3/14/2019	Source Control	No Issues
Heiser Body Co., LLC	9426 8th Avenue S	11/22/2019 12/23/2019	Source Control	Conveyance system cleaned and labeled. Confirmed washbay connected to sanitary sewer.
ICON Materials	1115 S 96th Street	5/22/2019 6/28/2019 8/14/2019	Source Control	Stenciled storm drains, labeled drums, spill plan updated.
Industrial Automation, Inc.	1421 S 93rd Street	8/1/2019	Source Control	Storm drains stenciled.
KRS Marine Construction Inc.	1621 S 92nd PL	4/19/2019 7/16/2019	Source Control	Improvements made in labeling, record keeping and portable secondary containment.

Table D-2. King County Stormwater Services Inspections in LDW Basin (2019)

Facility Name	Address	Inspection Date	Inspection Type	Notes
Nota Bene Cellars Ltd	9320 15th Avenue South, Unit CC	3/11/2019	Source Control	No Issues
Progressive Fastening	837 S Director Street	11/1/2019	Source Control	Referred to KCIW for discharge approval.
Puget Sound Coatings	9220 8th Avenue S	11/21/2019	Source Control	No Issues
Road Bear RV Sales	1541 S 96th Street	4/15/2019	Source Control	No Issues
Sea King Industrial Park	1600 S 92nd Place	2/28/2019	Source Control	Storm drains labeled, advised tenants on solid waste disposal.
Security Contractor Services	9619 8th Avenue S	4/4/2019	Source Control	Replaces metal shaving bins and covered scrap bins.
Shell Gas Station & Bikini Espres	9525 14th Avenue S	8/26/2019	Source Control	Cleaned up site and properly stored waste oil.
Sound Propeller Systems	7916 8th Avenue S	4/4/2019	Source Control	Improved SW storage and disposal.
South 93rd Business Park	Various addresses on S 93rd and 15th Avenue	2/28/2019 4/3/2019	Source Control	Labeled storm drains, cleaned outdoor areas, educated tenants.
SP+ Transportation	9301 4th Avenue S	7/2/2019 3/14/2019	Source Control	Cleaned and verified wash bay system connected to the sanitary sewer.
Sunbelt Rentals Inc.	9230 4th Avenue S	4/30/2019	Source Control	Catch basins labeled.
RM 3.4-3.8 West (EAA-5: Terminal 117)				
Rick's Master Marine	1411 S Thistle Street	12/12/2019	Source Control	No Issues
Location Not Identified				
AT&T site	None identified.	2/27/2019	Source Control	Storm drains cleaned and labeled. Paint booth filters characterized, improvements made for universal waste storage.
Former Quick Precision, Inc.	None identified.	4/2/2019	Source Control	No Issues
Summit Supply	None identified.	3/29/2019 5/8/2019	Source Control	Storm drain system cleaned and stenciled.

Source: King County 2019, Table 3 [12426]

Appendix E: Ecology Source Control Inspections (2019)

Table E-1. Water Quality Inspections

Table E-2. HWTR Inspections[1]

Table E-3. Urban Waters Inspections[2]

Table E-4. Water Quality Miscellaneous

[1] Need HWTR Inspection information for 2019 to populate this table.
[2] Need Urban Waters Inspection information for 2019 to populate this table.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
Upper Reach				
RM 4.9 East (EAA-7: Norfolk CSO/SD)				
WAR000150	Boeing Military Flight Center	10002 East Marginal Way S	8/13/2019	A new discharge sampling point for Area 1 is needed for runoff from Stall 75. Sampling for Areas 1 and 4 should be conducted independently with the sampling point for Area 4 moved from MH-1.1M to CB-1.26C. MFC needs to add a new discharge monitoring location for Area 6 at CB-6.2C. Two spills were observed on the site. An unmapped catch basin was observed in Area 2. The facility will work with KCIA to identify the catch basin and update the SWPPP. The SWPPP needs to be updated to identify any remaining areas of PCB contamination that may contribute to stormwater and BMPs to address the sources.
WAR125005	MacDonald Miller Facility Solutions Fab Shop	3701 S Norfolk Street	3/12/2019	No documentation of inspection available on PARIS.
			4/23/2019	Technical assistance visit. No documentation available on PARIS.
			5/3/2019	Technical assistance visit. No documentation available on PARIS.
RM 4.3-4.9 East (Boeing Developmental Center)				
WAR000146	Boeing Developmental Center	9725 East Marginal Way S	8/8/2019	Heavy sediment and debris accumulation were observed in two material storage areas. All other areas appeared well swept. Two open top metal bins with fine metal particles and unidentified liquid residue were uncovered. Peeling paint was observed on some galvanized structures. The drainage area to DC1 has been converted to parking and its discharge no longer needs to be sampled. The SWPPP needs to be updated with all potential sources of PCBs and the BMPs implemented to eliminate PCBs and other contamination in stormwater.
RM 3.9-4.3 East (Slip 6)				
WAR008681	Insurance Auto Auctions	8801 East Marginal Way S	1/3/2019	There were no vehicles on the site; IAA indicated their lease was expiring in November 2019. The site appeared well swept though there was some debris accumulation at a few catch basins. Sheen observed on stormwater on the site was likely due to stormwater mobilizing residual materials.
RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA)				
WAR305886	DHL Express (now Mente Hangar)	8075 Perimeter Rd S	5/29/2019	Mente began industrial operations at the facility in October 2018 and requested Ecology conduct this technical assistance inspection to assess whether or not the current discharge monitoring locations are appropriate for complying with the ISGP. This was not a compliance inspection. The inspection found that one of the two discharge points monitored by the facility was unnecessary. Sampling of runoff from the area of industrial activity is already performed at sample point 100, and since stormwater within the bypass line does not appear to be associated with Mente's industrial activities, continued monitoring at sample point 200 is not necessary at this time.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)				
WAR003231	Jorgensen Forge Corp	8531 East Marginal Way S	7/9/2019	In 2018, Star Forge announced plans to sell the Jorgensen Forge facility. The purpose of this inspection was to discuss the plans for vacating the site, determine what steps may need to be taken to terminate ISGP coverage, and provide technical assistance as appropriate. Jorgenson Forge intended to fully vacate the site by December 2019. As part of the clean closure process, Jorgenson Forge will be flushing the storm system and cleaning the building gutters. They will also be surveying the buildings and structures on-site for potential hazardous building materials (e.g. paints) to determine the extent of additional remediation that may be required. Jorgensen Forge planned to continue operation of the stormwater treatment system. Salvage and clean closure plans could change depending on sale of the site and potential future owner's plans for building demolition.
RM 3.8-4.2 West (Sea King Industrial Park)				
WAR125038	Absolute German	9510 14th Avenue S	2/7/2019	Filter insert in the only accessible catch basin was filled with sediment and debris and needed to be replaced or maintained. Treatment system difficult to access due to vehicles and other materials stacked around it and there was trash and debris in the system. No records retained for disposal of waste oil or other chemicals. SWPPP missing several sections, not up to date, no site map. No spill logs on site; no Annual Reports submitted to Ecology.
WAR00154	Ace Galvanizing	429 S 96th Street	1/30/2019	Ace Galvanizing has not been sampling stormwater from the access road east of the production building and needs to conduct sampling there starting 1Q 2019. The SWPPP map needs to be updated with the new sampling location. Track out of soil was observed from the gravel area in the NW corner of the site onto South 96th Street.
WAG503282	ICON Materials Asphalt Plant	1115 S 96th Street	8/28/2019	All outfalls and monitoring points appeared to be compliant with the conditions of the Sand and Gravel General Permit. Ecology's only concern was that documentation regarding annual site management plan review was missing.
WAR001949	Industrial Automation Inc	1421 S 93rd Street	1/4/2019	The facility SWPPP had last been updated in February 2012. Its site map identified a single discharge point though it appears stormwater in the eastern yard may discharge via sheet flow. If the facility determines this discharge is not substantially identical to the existing discharge sampling point then discharge samples must be taken and the SWPPP updated. The facility has not submitted annual reports during the current permit term. The facility indicated they took samples after multiple days of sustained rainfall, which is in violation of the permit requirements.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
WAR002142	Puget Sound Coatings	9220 8th Avenue S	11/21/2019	SWPPP map was inaccurate. Several catch basins were missing, PSC's two underground detention pipes were not shown, and it was not updated to show revisions to the drainage system on the north side of the site that were made when treatment was installed. Several catch basin inserts required maintenance or replacement. Issues with dust and debris accumulation were observed in several locations on-site. Areas of particular concern included a concentrated area of dust accumulation around PSC's dust collection system and a line of spilled zinc dust on the west side of the site. One uncovered roll off bin was present on-site that had a hole in the bottom and contained a layer of unidentified reddish-brown dust/debris.
WAR000650	Selland Auto Transport (ISGP now held by North American Auto Transportation Inc.)	615 S 96th Street	7/16/2019	ISGP coverage was transferred to NAAT in September 2018. The SWPPP should be updated to ensure it accurately reflects all current site conditions and BMPs. The site map did not identify the facility's discharge sampling location. Ecology recommends that NAAT contact the vendor for their Enpurion treatment system to discuss these exceedances. Miscellaneous metals, vehicle parts, tires, etc. were stored outside on the south side of the site. Staining from past leaks/spills was observed on the pavement the truck/vehicle parking areas. No evidence of recent leaks/spills was observed.
WAR301372	Samson Tug & Barge South Park Facility	9228 10th Avenue S	3/20/2019	The site was entirely paved in 2017 and drainage modified to direct all stormwater to treatment. Trench drains were installed along the a portion of the site's western perimeter in 2017 to intercept sheet flow runoff and direct it to treatment. The entire stormwater conveyance system was also re-sealed in 2018 to prevent groundwater intrusion. Samson previously had two discharge points, termed outfall 1 and outfall B. Outfall 1 is the discharge point for the electrocoagulation system, and is where Samson currently conducts quarterly discharge monitoring. Outfall B is no longer active. Several small spills from leaking vehicles/equipment were observed during the inspection. Miscellaneous chemicals were stored on the ground and on shelves in the back of a maintenance structure. It appeared there may be the potential for spilled material to flow outside in the event of a large spill. The SWPPP was out of date and inaccurate with respect to BMPs, treatment, and other aspects of facility operations.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
Middle Reach				
RM 2.8 East (EAA-3: Slip 4)				
WAR000226	North Boeing Field	7700 East Marginal Way S	7/29/2019	Boeing was not documenting leaks or spills that were not recordable. One aircraft refueling operation was observed during the inspection and the following compliance issues noted: Drip pans or equivalent containment measures were not in use during fueling activities. After fueling was complete, fueling nozzles were placed directly on the ground and were dragged across the pavement as the hose reels were retracted. Multiple stains from fuel spills/leaks were present on the ground in the area where fueling occurred and at other locations around the facility. A small metal drip pan with an outlet hose was plumbed to the storm system at the fuel farm. Staining from a large number of old spills was present outside of the satellite hazardous waste accumulation area at the paint buildings is worthy of investigation. Some chemicals and petroleum products were not in secondary containment.
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)				
WAR011560	Dawn Foods Products-Sea Dry Mix	6901 Fox Avenue S	3/12/2019	Numerous patches of oil sheen from a leaking truck were observed on the ground. Facility procedures are for all trucks to park over drip pans or spill pads when on site. Facility representatives stated a plan was being developed to respond to Level 3 Corrective Action for copper and Level 2 Corrective Action for zinc. The spill log was blank and needs to be maintained for all spills.
WAR125002	Seattle Iron & Metals Corp Truck Parking	730 S Myrtle Street	11/13/2019	The SWPPP and O&M manuals should be reviewed and updated to properly identify all stormwater facilities and treatment systems, and to include the correct maintenance procedures. SIM Truck Parking was not tracking leaks and spills in a spill log. One full roll-off bin and several smaller dumpsters were uncovered. Two 55-gallon drums of diesel exhaust fluid and one unlabeled 55-gallon drum did not have secondary containment. Multiple spills of automotive fluids were observed on site.
RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)				
WAR011723	Algas SDI	151 S Michigan Street	3/12/2019	Hand sweeping is a deviation from the permit conditions that indicate using a vacuum sweeper. Water was overflowing from the treatment system settling tank. Algas SDI needs to contact the manufacturer to confirm it is operating appropriately. Ecology recommends facility purchase a universal spill kit in addition to the oil only spill kit already on site. Facility needs to develop and maintain a spill log.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
WAR302045	Shultz Distributing Inc Marginal Way (Emerald Services, Inc./Emerald Services 2)	6851 East Marginal Way S	1/23/2019	Some drums were leaking to the ground and a spill sheen was evident on the pavement in the loading dock area. Another sheen from a separate leak/spill was present in the equipment parking area in the southeast corner of the facility. A few gallon containers of antifreeze were left outside by the loading dock. Some dumpsters and miscellaneous waste and recycling bins were not equipped with lids. One catch basin was surrounded by mud and standing water and not draining properly. SWPPP needs to be updated with all operational, structural source control, and treatment BMPs implemented to address corrective actions, and with a sampling plan that reflects changes implemented subsequent to treatment system installation.
WAR000962	Seatac Marine Services LLC	6701 Fox Avenue S	5/2/2019	SeaTac Marine repaved damaged sections of pavement in 2018 in response to Level 2 corrective actions and is in the process of investigating their drainage system to generate accurate maps. SeaTac Marine will change discharge sampling from CB5 to CB4, which captures all of the runoff coming from CBS and is more centrally located on the vehicle haul route. SeaTac Marine installed a new catch basin directly over the storm drain line that conveys runoff from the southeast portion of the site to replace sampling point at CB22. This new catch basin appears to capture runoff from material storage areas and from the shipping flat washing area. Two containers of solvents were stored outside without containment. An open container of surplus metal cargo straps was outside next to the river. Chemical and petroleum products were stored inside a shipping container that had a wood floor with staining from past leaks/spills. The container was too full to allow for a thorough inspection of the floor for cracks and holes.
RM 1.7-2.0 East (Slip 2 to Slip 3)				
WAR125423	Duwamish Metal Fabrication (Duwamish Marine Center/ Michigan Marine Properties LLC)	16 S Michigan Street	3/20/2019	Metal fabrication activities have decreased at the facility and the facility leases space to a wood shop and trailer repair company. The trailer repair company conducts some activities outdoors. Duwamish Metal Fabrication uses the southern dock at the adjacent Samson Tug and Barge Facility (WAR011484) about once per month. Concrete debris was observed next to a catch basin. A tote of chitosan solution was outside without cover. SWPPP not signed since 2015 and had several deficiencies including incorrect effluent limits. Discharge is commingled with Samson Tug & Barge and discharge data collected for one facility should be reported for the other also.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
WAR010447	General Biodiesel Seattle	6333 1st Avenue S	1/3/2019	Large amounts of oil/grease residue from past leaks/spills was observed on the ground. Residue was also observed on the outside of hoses used for rail car transfer operations. Employees were observed dragging one of these hoses from the rail car area to the north side of the site during the inspection. The movement of these and other materials or equipment around the site could introduce pollutants into stormwater discharge. Sheens were observed on stormwater throughout the facility including on stormwater runoff discharging at the curb cutouts along the Duwamish River. No secondary containment is provided for smaller grease containers that are dropped off by members of the public. Bottles of Zerex Extended Life Antifreeze/ Coolant were observed outside without secondary containment. Spilled Magnesol was observed on the ground next to a large covered dumpster.
			6/13/2019	The facility continued to have issues with spills to the ground with insufficient cleanup; lack of secondary containment for two tank cars used for long-term storage of grease; leaks due to degraded seals on containment berms; and contamination track out by employees shoes and equipment such as forklifts. Hoses used during transfer operations, which are frequently coated in residual oil and grease, were stored outside. General Biodiesel provided updates after the inspection indicating that the degraded seals around containment areas were being repaired and holes in the containment sills at the loading bays were patched. A metal walkway was installed inside the outdoor concrete containment structure to allow employees to walk through the area without tracking out spilled material. Track mats were installed at the building entrances/exits.
			12/5/2019	Unaddressed spills were observed in numerous locations throughout the facility including Magnesol, a puddle of cloudy liquid with an oily sheen, and oil and grease stains. Tank cars still did not have secondary containment. Track-out appeared to be better managed but was still present.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
WAR011484	Samson Tug & Barge Seattle	6361 1st Avenue S	3/20/2019	Moderate track out from the exit onto 1st Ave S was observed. A buckets with unidentified liquid materials were observed outside without containment. Additional chemicals were stored inside a deteriorating intermodal container on site. An unlabeled over pack drum with various containers of unidentified liquid chemicals was observed outside. An open-top container with a mixture of waste materials and rigging equipment was observed outside near the facility exit. A piece of heavy equipment on the north side of the facility was leaking onto the ground. A drip pan placed beneath the equipment did not catch all leaking material. Sheen from an unrelated leak/spill was also observed on standing water at the south end of the facility. Samson has two docks on the Duwamish River that are used for industrial activities. Samson uses the northern dock and Duwamish Metal Fab uses the southern dock. Heavy soil accumulation was observed on the northern dock. Quarterly sampling of discharges from the northern dock was inadequate due to deficiencies in how the collection was set up.
RM 2.2-3.4 West (Riverside Drive)				
WAR308860	American Gypsum Recycling Kenyon (formerly Independent Metals Plant 2)	816 S Kenyon Street	8/21/2019	The purpose of Ecology's inspection was to determine if American Gypsum Recycling was eligible for a CNE exemption. The facility had just started operations recycling sheetrock to produce gypsum. The inspection found industrial activities and materials on-site that are exposed to precipitation, making the facility ineligible for a CNE. In addition, wash water being used to remove gypsum dust from exterior pavement) was observed in an area that drains to surface waters. Site improvements being explored by the facility include paving the outdoor yard, moving materials into covered structures, and potentially implementing a pneumatic system for transport and loading/unloading of gypsum, which could help address dust track out.
WAR000763	Gear Works Seattle Inc. (now Machinists Inc Plant 5)	500 S Portland Street	1/23/2019	Uncontained concrete washout wastewater and slurry was observed on the ground near the intersection of 7th Avenue South and South Riverside Drive. Most of the washout was located on a vacant lot at 7700 7th Avenue South, though some had flowed off the lot and into public right of way. The uncontained concrete washout was in close proximity to a separate storm sewer catch basin that drains to the Duwamish, however, no discharge appeared to have occurred. The concrete washout was tested with a pH test strip and had a pH in the range of 11 to 12. Concrete truck washout creates process wastewater that must be contained and not discharged to stormwater sewers, surface waters, or ground water.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
WAR000763	Gear Works Seattle Inc. (now Machinists Inc Plant 5)	500 S Portland Street	1/30/2019	The SWPPP's site map did not identify the stormwater drainage structures on-site or the drainage areas for each discharge point. The facility appeared well swept but there was heavy sediment and debris accumulation on the ground in areas where pallets of materials and finished products are stored outside. Spilled wash water/ slurry was observed on the ground in the containment area where the concrete trucks are washed. Small patches of sheen from an equipment fluid leak were observed being cleaned by employees who were also cleaning old stains. Machinists Inc. sold the vacant lot located at 7700 7th Ave South where concrete trucks washed out onto the ground the previous week. Machinists Inc. is in the process of moving their property off this lot. Some concrete washout was still present on the ground at the vacant lot, but it was covered with a tarp to prevent stormwater exposure.
WAR301516	Hurlen Construction (now Pacific Pile & Marine Main Yard)	700 S Riverside Drive	8/12/2019	The purpose of this site visit was to meet with Pacific Pile & Marine and their environmental and engineering consultants to discuss the facility's plans for implementation of Level 3 Corrective Actions. Pacific Pile & Marine recently moved the discharge sample location at their timber dock but the sampling method was not collecting samples representative of discharge from the dock. The monitoring point must be moved back to a location under an area of the dock where industrial activities are conducted. An uncovered dumpster of scrap metal was present at the maintenance yard (582 S Riverside Drive).
WAR304003	United Site Services of Nevada Inc Sea	1024 S Elmgrove Street	9/6/2019	Curbing and asphalt berms were installed along the northern and eastern sides of the facility in all areas that previously had the potential to discharge stormwater directly to the Duwamish River. New catch basins were installed on the east side of the site to intercept stormwater runoff and direct it to the combined sewer system. Portions of the site that were previously unpaved and sloped toward the Duwamish River were re-graded and paved Runoff from these areas now appears to flow entirely to combined sewer system catch basins. All potential stormwater discharges from the facility to waters of the State appeared to have been eliminated. This facility is eligible to apply for termination of ISGP coverage.
RM 2.1-2.2 West (EAA-2: Trotsky Inlet)				
WAR125959	Seaport Petroleum Detroit Avenue (now Christensen, Inc.)	7800 Detroit Avenue SW	4/5/2019	A large patch of oil sheen was observed on the ground and sheen was observed flowing into one of the catch basins upstream of the oil water separator. A drip pan with oil residue was uncovered on the ground. During the visit Ecology discussed copper exceedances and potential next steps for reducing copper concentrations such as conducting source tracing sampling, evaluating the roof as a possible source, further increasing sweeping, installing additional BMPs.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
RM 2.1 West (1st Avenue S Storm Drain)				
WAR011078	MAPSCO (now Valence Surface Technologies - Seattle)	8135 1st Avenue S	2/14/2019	Valence Surface Technologies recently purchased MAPSCO. The facility still operates under the name MAPSCO. The SWPPP was last updated in 2016 and was out of date, was missing required BMPs, and included language from an old, expired version of the ISGP. The facility needs to resume sampling of several parameters it had stopped sampling due to "consistent attainment of benchmarks" because sampling can only be suspended for 4 quarters. Empty chemical containers were left outside without lids.
WAR011741	Marine Lumber Service Inc	525 S Chicago Street	8/21/2019	SWPPP was out of date; two conflicting site maps were included. Marine Lumber needs to work with their consultant to accurately map all of the stormwater drainage infrastructure on the site. The facility is only sampling discharge from the Plant Yard area of the site. One or more quarterly discharge monitoring points must be added for runoff from the other areas (Plant Storage Yard, Shipping Yard, and/or East Yard). Miscellaneous galvanized metal products were stored outside in several locations. Four fuel canisters and two containers of kerosene were stored without secondary containment inside of a wooden cabinet in the plant yard.
WAR011800	Samson Tug & Barge Detroit Ave SW	7553 Detroit Avenue SW	3/20/2019	The Ecology inspector noted that Samson installed a berm along the east side of the site to prevent sheet flow discharges from the facility perimeter. A French drain was also installed in the northeast corner of the site to intercept runoff and convey it to a Chitosan Enhanced Sand Filtration (CESF) treatment system. The installation date was not provided. Chemicals and petroleum products observed in the maintenance area required secondary containment to prevent spills to ground. Moderate track out onto Detroit Ave SW was observed; the quarry spalls were degraded and covered in soils. The SWPPP was deficient in several areas.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
WAR303257	SHA South Operations Facility	7500 Detroit Ave SW	5/2/2019	While driving past the SHA facility, Ecology Inspectors observed an SHA employee washing a vehicle outside. Wastewater from the vehicle washing activities was discharging to a City of Seattle municipal separate storm sewer system (MS4) drainage ditch that flows to an unnamed creek located approximately 60 feet northwest of the facility. The SWPPP sampling plan contains conflicting information about discharge points. The discharge location description table identifies DP3 as a catch basin in the east yard, but the substantially identical outfall section describes DP3 as incidental sheet flow that primarily discharges to sanitary sewer. The site map identified the catch basins, but not the stormwater conveyance pipes on-site or the solid waste receptacle storage area on the north side of the facility. An uncovered metal trough containing an unidentified dark, cloudy liquid was outside on the east side of the site. The facility representative was unsure whether the liquid in the trough at the time of the inspection was from tool cleaning, accumulated stormwater, or a combination of both. The trough must be moved indoors or provided with cover and containment. Several solid waste receptacles in the small lot on the north side of the main facility were open. Quarterly discharge sampling is conducted at the storm system outfall to an MS4 drainage ditch running along 2nd Ave SW on the east side of the facility. Ecology could not locate the outfall during the inspection.
RM 1.6-2.1 West (Terminal 115)				
WAR127040	Seafreeze Ltd Terminal 115 (Michigan Street Facility/Lineage Seafreeze)	206 SW Michigan Street	6/6/2019	SWPPP was last updated in November 2017. Monthly site inspections had not been conducted in about a year. SWPPP needs to include the Grattix box O&M and needs to be updated to indicate one of the Grattix boxes was taken offline due to clogging issues. Accumulated refrigeration coil ice that is potentially contaminated with zinc was dumped in the loading bay area that drains to the storm system. Violations included open dumpsters; leaking equipment; paint and sealant containers without secondary containment; and materials spilled on the ground not cleaned up.
			6/13/2019	The primary purpose of this site visit was to discuss Orca Bay Food's CNE exemption. A site inspection was also performed. Containers of degreasing chemicals were stored outside on the roof without secondary containment. There was staining on the roof from the fryer exhaust fans across to the storm gutters. Stormwater gutters contained a black, sticky substance and possibly congealed grease. Exposure of industrial equipment and activities makes Orca Bay Foods ineligible for continued coverage under a CNE exemption from the ISGP. Ecology revoked the CNE and Orca Bay Foods must apply for a permit.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
Lower Reach				
RM 1.2-1.7 East (St. Gobain to Glacier Northwest)				
WAR000056	Certainteed Gypsum	5931 East Marginal Way S	2/22/2019	CertainTeed continues to have issues with gypsum releases where conveyor belt #3 transitions to belt #4 and where the belt flips from the top to the bottom. The facility is in the process of preparing plans to address these sources of fugitive gypsum. The facility cleaned up the accumulated gypsum on the bank of the Duwamish River and is looking for a company that can clean the overwater pipes and structures. The facility needs to sample stormwater discharge from the portion of the riverbank impacted by the fugitive gypsum.
WAR001134	Ardagh Glass	5801 East Marginal Way S	3/12/2019	Management of particulate debris appears to have improved since the previous inspection but significant amounts of sediment and debris accumulation was observed in several locations and was particularly heavy on the west side of the site. Track out control BMPs appeared effective at the exit from Strategic Materials operations building. Glass particles were observed on the ground on the west side of the Strategic Materials building. Sheens from spills/leaks were observed on the ground in two locations. Pools of turbid water were observed adjacent to the LDW. If that water discharges to the LDW, it must be sampled. Facility is working with a consultant to address level 3 corrective actions for turbidity, copper, and zinc. The facility needs to continue to investigate sources of sediment and debris and implement additional BMPs to address those sources.
			7/9/2019	Some sediment and debris was still present around the loading bay doors in the Strategic Materials area but all areas appeared noticeably cleaner than in the two previous inspections. Ardagh indicated they now hold regular meetings with Strategic Materials to discuss compliance requirements. Ardagh identified two sections of collapsed storm system pipe that could be contributing sediment to stormwater discharges. One was replaced and repairs for the other are planned. Ardagh installed an asphalt berm along the western perimeter of the site next to the Duwamish River to reduce potential for direct stormwater discharges to the river.
			9/17/2019	Ecology observed a large amount of dust accumulation on top of the facility's silo. The dust consisted of the various components that are mixed in the silo to manufacture glass: limestone, sand, soda ash, cullet, and various dyes, and attributed the dust accumulation issue to the fact that the dust collection system for the silo was old and no longer functioning properly. Ardagh Glass had plans to replace the dust collection system by the end of October 2019.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)				
WAR301508	Plymouth Poultry	2418 Airport Way S	1/17/2019	As of the date of the inspection, Plymouth Poultry had not submitted any DMRs or Annual Reports to Ecology. Ecology has issued five Warning Letters to Plymouth Poultry for failing to submit DMRs. There are two catch basins in the loading dock area that drain to the City's MS4. Sediment and debris accumulation was observed around these catch basins. No full spill kits were observed in the fuel island area or in any other outdoor portions of the facility. There were sheens from vehicle fluid leaks in several locations in the loading dock area. Plymouth Poultry conducts washing activities that generate process wastewater that is discharged to the storm system and to a gravel lot, which is prohibited. Plymouth Poultry was unable to locate their SWPPP, monthly inspection reports, spill logs, and employee training logs. Plymouth Poultry has hired a consultant to prepare a new SWPPP.
			6/6/2019	Plymouth Poultry submitted two drafts of a SWPPP. The site map did not include all required information from permit condition S3.8.1 (e.g., areas of pollutant contact, discharge points, and sample locations were not identified; the map also did not include the gravel lot on Airport Way South used for truck parking and washing). Plymouth Poultry needs to identify a sampling point representative of discharge from the loading bay/fueling area in addition to the single downspout currently sampled. No evidence of recent leaks or spills was observed on-site. Paved areas appeared relatively well swept, with the exception of some sediment and debris accumulation along loading bays.
WAR000930	Skyline Electric & Mfg Co Inc	3619 7th Avenue S	7/16/2019	The SWPPP site map did not identify the facility's sampling location but was updated after the inspection. The facility was in good shape during the inspection. The only deficiency noted was failure to conduct quarterly sampling in Q2, which the facility attributed to miscalculating when the period of 12 quarters for Consistent Attainment should have ended.

Table E-1. Ecology LDW Water Quality Inspections (2019)

NPDES Permit No.	Facility Name	Address	Date Inspected	Ecology Findings
WAR001155	Union Pacific Railroad Co Dawson St	402 S Dawson Street	2/21/2019	The SWPPP was last updated in August 2016 and incorrectly identify the maintenance and fueling area as the only portions of the site regulated by the ISGP. The site map identified sampling locations at the treatment systems for Systems A, B, and F, however, the SWPPP monitoring plan identifies these drainage areas as being "substantially identical" and states that sampling is only conducted for System A. One 55-gallon drum of brake cleaner was observed without secondary containment at the packer maintenance area. Five gas canisters without secondary containment were observed at the chassis maintenance area. A large pool of turbid water was observed on the pavement on the southwest side of the site, just northwest of 4th Avenue South Bridge. Water and mud from this pool appeared to have discharged to the adjacent property at 4800 Denver Avenue South. A small pile of treated wood (railroad ties) was observed outside of the packer maintenance area.
RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)				
WA0002232	Lafarge	5400 West Marginal Way SW	10/16/2019	Technical assistance visit. No documentation available on PARIS.
RM 0.0-1.0 West (Spokane Street to Kellogg Island)				
WAR000474	Fog Tite Inc	4819 West Marginal Way SW	1/14/2019	Fog Tite has installed treatment at the facility in response to Level 3 Corrective Actions. Many areas of the yard were insufficiently swept and had substantial accumulation of sediment, especially where bobcat traffic was high, and at the rear of the facility near the treatment system. A drum of oil was stored outside of secondary containment and exposed to stormwater. Some dumpsters and miscellaneous waste and recycling bins were not equipped with lids. The SWPPP site map needs to be updated to include the installed treatment system and all catch basins, conveyance systems, and associated stormwater infrastructure. The sampling location needs to be correctly identified and the sampling plan updated to reflect changes implemented subsequent to treatment system installation.

BMP = best management practice
CNE = Conditional No Exposure
DMR = discharge monitoring report
EAA = Early Action Area
ISGP = Industrial Stormwater General Permit
LDW = Lower Duwamish Waterway
NPDES = National Pollutant Discharge Elimination System
O&M = operations and maintenance
RM = river mile
SWPPP = Stormwater Pollution Prevention Plan
TSS = total suspended solids

Table E-4. Additional Ecology Water Quality Information (2019)

NPDES Permit No.	Facility Name	Address	Miscellaneous Water Quality Updates
Upper Reach			
RM 4.9 East (EAA-7: Norfolk CSO/SD)			
WAR125005	MacDonald Miller Facility Solutions Fab Shop	3701 S Norfolk Street	The facility installed Enpurion catch basin inserts in each of their catch basins in May 2019 (MacDonald Miller 2019 [12439]).
Middle Reach			
RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)			
WAR011560	Dawn Foods Products-Sea Dry Mix	6901 Fox Avenue S	In response to copper and zinc exceedances in multiple quarters in 2018, Dawn Foods installed MetalZorb inserts in all catch basins with CleanWay inserts and retained a third-party consultant to perform an audit of the stormwater compliance program and provide ongoing stormwater compliance services. The facility was evaluating the best fit Level 3 corrective action BMP which were to be implemented by the end of the third quarter in 2019 (Dawn Foods 2019 [12440]).
RM 1.7-2.0 East (Slip 2 to Slip 3)			
WAR010447	General Biodiesel Seattle	6333 1st Avenue S	In response to copper and zinc exceedances in 2018, General Biodiesel installed downspout filtration boxes (Grattis boxes) at the base of downspouts on the west side of the building in August 2018 (General Biodiesel 2019 [12441]).
RM 2.1 West (1st Avenue S Storm Drain)			
WAR000737	South Recycle & Disposal Station	8100 2nd Avenue S	Per the facility's 2018 Stormwater Annual Report, all industrial activity has moved to the new South Transfer Station. Only trailer parking remained at the facility, which drains to the sanitary sewer (SPU 2019c [12442]). Ecology sent an Administrative Order to SPU for the site in July 2019 regarding compliance with the Construction Stormwater General Permit (WAR307902) and management of the site's contaminated soils and potential for contaminated stormwater (Ecology 2019ai [12443]).
WAR000582	Waste Management Seattle Hauling Co.	7901 1st Avenue S	On September 16, 2019, Ecology issued Administrative Order 16817 to Waste Management Seattle Hauling Co. requiring the facility to comply with pollution control regulations and its ISGP with respect to copper exceedances (Ecology 2019an [12444]). Waste Management proposed to bypass Level 2 corrective actions and install a Level 3 BMP. The Administrative Order granted modification of coverage, Level 2 time extension requiring Waste Management to submit an engineering report, progress reports, documentation demonstrating treatment is installed and operational, and an operations and maintenance manual.

Table E-4. Additional Ecology Water Quality Information (2019)

NPDES Permit No.	Facility Name	Address	Miscellaneous Water Quality Updates
Lower Reach			
RM 1.2-1.7 East (St. Gobain to Glacier Northwest)			
WAR001134	Ardagh Glass Inc	5801 East Marginal Way S	In response to Administrative Order 16599 Ardagh Glass implemented several source control actions including: completing a stormwater treatment options analysis technical memorandum; testing to validate vendor-supplied media removal of metals; drafting of preliminary civil drawings to estimate structural changes required for treatment implementation; rough estimation of asphalt paving and below-grade pipe installation; structural repairs to below-grade conveyance piping within the Outfall 2 drainage; and collection of additional source assessment data. Sitewide surface repairs, galvanized siding replacement, and a dust collector containment berm were scheduled for January 2020 (Ardagh Group 2019 [12446]).
WAR000056	Certainteed Gypsum Manufacturing	5931 East Marginal Way S	CertainTeed submitted a plan to address shoreline contamination under the facility's rock loading system in September 2019 (CertainTeed 2019 [12445]). Source control actions the facility had implemented to date included cleaning of the affected shoreline by a contractor in February 2019 and developing shoreline cleanup standard operating procedures. The facility planned to redesign the transfer equipment, evaluate the dust collection system, and install maintenance platforms.
WAR301516	Hurlen Construction (now Pacific Pile & Marine Main Yard)	700 S Riverside Drive	On October 24, 2019, Ecology issued Administrative Order 16312 covering the facility's Main Yard and Dock at 700 S Riverside Drive, and yards at 582 S Riverside Drive and the southern terminus of S Riverside Drive (Ecology 2019ay [12447]). As of November 2019 the facility was waiting for permits to set up settling tanks to collect freestanding water (Pacific Pile & Marine 2019a [12448]). As of December 2019, the facility had replaced approximately 80 feet of dilapidated decking in the south end of the dock. Another 80 feet were to be replaced from the scale to the south meeting with the recently replaced section. The facility planned to have the dock sealed in January or February of 2020 to make it impervious to stormwater and have the water sheet flow back to the gravel yard (Pacific Pile & Marine 2019b [12449]).
5.3 RM 0.9-1.0 East (Slip 1)			
WAR000139	Alaskan Copper Works	3200 6th Avenue S	An August 2019 engineering report prepared for Alaskan Copper Works facility at 3405 6th Avenue South states that three lift stations were installed in November 2018 to collect all stormwater from industrial drainage basins east of 6th Ave South to a centralized treatment system that discharges treated water to the DP-03 outfall (Catchment Solutions 2019 [12450]; Alaskan Copper Works 2019 [12451]).

Table E-4. Additional Ecology Water Quality Information (2019)

NPDES Permit No.	Facility Name	Address	Miscellaneous Water Quality Updates
RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)			
WAR011326	MacMillan Piper Inc Airport Way	655 S Edmunds Street	This facility's 2018 Stormwater Annual Report states that repairs were made to deteriorating asphalt in 2018 and built a permanent shelter over the scrap metal bins in February 2019 (MacMillan Piper 2019 [12452).
WAR301360	Northwest Container Services	635 S Edmunds Street	During the current reporting period, NW Container Services installed a Contech Vortech treatment system. As of February 2019 the system was partially constructed (NW Container Services 2019 [Construction Update]). The facility's 2019 stormwater annual report stated that the system was completed in March 2019 (NW Container Services 2020 [12453]).

BMP = best management practice
EAA = Early Action Area
ISGP = Industrial Stormwater General Permit

Appendix F:
SPU Source Tracing Data (2019)

Appendix F-1.
SPU Source Tracing Sample Locations (2019)

Station ID	Sample No.	Date	Type	Sewer Type	Source Control Area	Outfall	Location	X Coordinate	Y Coordinate
UPPER REACH									
MH201	NCH-060519-1	6/5/2019	Inline Grab	SD	RM 2.8-3.7 East	16th Ave S SD (east)	East side of 16th Avenue S, upstream of Boeing Plant 2	1274855.49	197551.13
17th-ST1	17TH-ST1-050819	5/8/2019	SedTrap	SD	RM 3.4-3.8 West	17th Ave S SD	In maintenance hole on shoulder between 16th and 17th Avenue S, at outfall pipe start	1275054.02	195624.02
CB334	MKJ-050319-4	5/3/2019	CB Grab	SD	RM 4.9 East	Norfolk CSO/SD	Catch basin in covered loading dock on east side of Fairn & Swanson building	1282449.34	189924.69
NST1	NST1-041719	4/17/2019	SedTrap	SD	RM 4.9 East	Norfolk CSO/SD	60-in line west of MLK Way	1283043.33	189358.24
NST1	NST1-041719-G	4/17/2019	Inline Grab	SD	RM 4.9 East	Norfolk CSO/SD	60-in line west of MLK Way	1283043.33	189358.24
NST3	NST3-041619	4/16/2019	SedTrap	SD	RM 4.9 East	Norfolk CSO/SD	Ditch at MLK Way and Boeing Access Road	1283147.01	188728.61
NST4	NST4-041619	4/16/2019	SedTrap	SD	RM 4.9 East	Norfolk CSO/SD	S Norfolk St at SE corner KC Airport	1280697.58	190890.74
NST5	NST5-041619	4/16/2019	SedTrap	SD	RM 4.9 East	Norfolk CSO/SD	East Marginal Way S at S Norfolk Street	1279322.05	190882.62
ODS68	MKJ-050319-3	5/3/2019	SurfDebris	SD	RM 4.9 East	Norfolk CSO/SD	Surface dirt in loading dock area at Fairn & Swanson	1282435.99	189972.62
MIDDLE REACH									
1st-ST1	1ST-ST1-041519	4/15/2019	SedTrap	SD	RM 2.1 West	1st Ave S SD	1st Avenue S pond, N side of S Holden St--SR99 inlet	1269988.18	198544.26
1st-ST2	1ST-ST2-041519	4/15/2019	SedTrap	SD	RM 2.1 West	1st Ave S SD	1st Avenue S pond, north side of S Holden St--SR509 inlet, SPU #786737	1269790.80	198570.70
1st-ST3	1ST-ST3-041619	4/16/2019	SedTrap	SD	RM 2.1 West	1st Ave S SD	SW Kenyon Street at 4th Avenue SW, SPU #714106	1267991.38	197680.32
1st-ST3	1ST-ST3-041619-G	4/16/2019	Inline Grab	SD	RM 2.1 West	1st Ave S SD	SW Kenyon Street at 4th Avenue SW, SPU #714106	1267991.38	197680.32
CB340	CEW-52219-1	5/22/2019	CB Grab	SD	RM 2.1 West	1st Ave S SD	Exterior storage for equipment rental company	1268961.64	198132.37
ODS69	MKJ-050319-2	5/3/2019	SurfDebris	SD	RM 2.1 West	1st Ave S SD	West wall ground dirt and moss at base of wall	1270890.66	196782.89
ODS70	MKJ-050319-1	5/3/2019	SurfDebris	SD	RM 2.1 West	1st Ave S SD	Window and frame exterior caulking on Bldg 8101	1270899.83	196817.62
7th-ST1	7TH-ST1-042219	4/22/2019	SedTrap	SD	RM 2.2-3.4 West	7th Ave S SD	7th Avenue S at S Portland Street, SPU #599721	1271845.54	198135.36
7th-ST1	7TH-ST1-042219-G	4/22/2019	Inline Grab	SD	RM 2.2-3.4 West	7th Ave S SD	7th Avenue S at S Portland Street, SPU #599721	1271845.54	198135.36
7th-ST2	7TH-ST2-041719	4/17/2019	SedTrap	SD	RM 2.2-3.4 West	7th Ave S SD	4th Ave S at S Barton St, next to P-Patch, SPU #878755	1270702.00	193616.50
7th-ST2	7TH-ST2-041719-G	4/17/2019	Inline Grab	SD	RM 2.2-3.4 West	7th Ave S SD	4th Ave S at S Barton St, next to P-Patch, SPU #878755	1270702.00	193616.50
7th-ST3	7TH-ST3-042219	4/22/2019	SedTrap	SD	RM 2.2-3.4 West	7th Ave S SD	S Southern Street just west of 7th Avenue S, SPU #599941	1271346.96	196842.03
HP-ST4	HP-ST4-041919	4/19/2019	SedTrap	SD	RM 1.6-2.1 West	Highland Park Way SW SD	Northwest corner of West Marginal and Highland Park Way S	1267618.04	200796.20
HP-ST6	HP-ST6-041919	4/19/2019	SedTrap	SD	RM 1.6-2.1 West	Highland Park Way SW SD	SW Michigan Street just east of West Marginal Way S	1268086.32	200870.80
HP-ST6	HP-ST6-041919-G	4/19/2019	Inline Grab	SD	RM 1.6-2.1 West	Highland Park Way SW SD	SW Michigan Street just east of West Marginal Way S	1268086.32	200870.80
MH32 (SL4-T6)	SL4-T6-041619	4/16/2019	SedTrap	SD	RM 2.8 East	I-5 SD (Slip 4)	Maintenance hole at Airport Way S and S Hardy Street	1274989.40	202834.00
MH32 (SL4-T6)	SL4-T6-041619-G	4/16/2019	Inline Grab	SD	RM 2.8 East	I-5 SD (Slip 4)	Maintenance hole at Airport Way S and S Hardy Street	1274989.40	202834.00
MH101	AGP-102519-1	10/25/2019	Inline Grab	SD	RM 2.0-2.3 East	S Brighton St SD	Maintenance hole on west side of Fox Avenue S and S Brighton Street	1271076.59	201126.61
CB349	AGP-102519-2	10/25/2019	CB Grab	SD	RM 2.3-2.8 East	S Garden Street SD	Catch basins next to the filterras at S Garden Street	1272079.85	199822.76
ODS58	CEW-52319-1	5/23/2019	SurfDebris	SD	RM 2.0-2.3 East	S River St SD	Site of V. Van Dyke Heavy Hauling, two CB lids in storage yard, East side.	1270166.94	202047.78
MH211	MKJ-061419-4	6/14/2019	Inline Grab	SD	RM 2.0-2.3 East	S River St SD	Last maintenance hole on line	1269926.63	201715.30
KN-ST1	KN-ST1-042319	4/23/2019	SedTrap	SD	RM 1.6-2.1 West	SW Kenny St SD/T115 CSO	Eastern end of S Kenny St, on T115	1268138.36	203628.91
LOWER REACH									
CB176	MKJ-042619-3	4/26/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Catch basin at corner of 601 S Snoqualmie Street in asphalt parkig lot; drains to Snoqualmie Street	1271840.60	208527.70
CB237	MKJ-042619-4	4/26/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Central lot catch basin on south side of Evoque Building	1271847.11	208333.22
CB336	AGP-042219-2	4/22/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Catch basin south of building @ 4021 6th Avenue S (Applied Industial Technologies)	1271576.02	210515.11
CB338	CDW-041119-2	4/11/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Catch basin in parking lot at 1902 S Main Street (Pratt Fine Arts Center)	1276829.97	222423.31
CB339	CEW-041119-1	4/11/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Trench drain in blacksmith area at 1902 S Main Street (Pratt Fine Arts Center)	1276784.11	222524.56
CB341	MKJ-061219-1	6/12/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Combination of two catch basins on north side of RSD Bldg, 625 S Industrial Way	1271967.67	209967.94
CB342	MKJ-061219-2	6/16/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	One catch basin on south side of RSD building at loading dock - east side, 625 S Industrial Way	1272001.16	209782.59
CB343	CEW-061219-1	6/12/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Catch basin at loading dock (Seattle City Light)	1270711.32	211203.16
CB344	CEW-061219-2	6/12/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Southern part of Seattle City Light property, catch basin along chain link fence	1270872.83	210469.77
CB345	CEW-6419-1	6/14/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Catch basin in south end of Seattle Radiator driveway, before FCMH, 5011 Ohio Avenue S	1268819.62	206631.31
MH10	MKJ-062019-3	6/20/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	1st Avenue S and S Denver Street	1270134.41	208029.88

Appendix F-1.
SPU Source Tracing Sample Locations (2019)

Station ID	Sample No.	Date	Type	Sewer Type	Source Control Area	Outfall	Location	X Coordinate	Y Coordinate
MH18	MKJ-052319-2	5/23/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	6th Avenue S and S Snoqualmie Street	1271741.79	208576.18
MH48	AGP-042219-1	4/22/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	4th parking spot from the west, north of railroad, south of fueling (Costco Wholesale)	1270930.82	208583.20
MH49	CEW-0411119-3/4	4/11/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Downstream of Pratt Fine Arts Center	1276357.35	222373.11
MH50	CEW-041119-5	4/11/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Upstream of maintenance hole coming from Pratt @ S Washington Street and 18th Avenue S	1276362.68	222637.71
MH52	NCH-062119-1	6/21/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Various lids in location. Taken from maintenance hole in SE of north junction, just upstream from flap gate	1269281.61	209080.07
MH53	NCH-062119-2	6/21/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Triple locking lid "T" flow maintenance hole on north driving lane	1270314.20	207816.30
MH57	MKJ-062519-1	6/25/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Diagonal mainline above Denver Avenue S	1269298.16	209234.26
MH58	MKJ-062519-2	6/25/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	NE of Ohio Avenue S, at mainline bend	1268999.40	209038.58
MH58	MKJ-070319-4	7/3/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	NE of Ohio Avenue S, at mainline bend	1268999.40	209038.58
MH59	MKJ-070319-1	7/3/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Maintenance hole at Diagonal outfall, 5 feet from river	1267147.11	209084.83
MH61	AGP-53019-1	5/30/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Maintenance hole south of S Nevada Street & 6th Avenue S	1271753.99	209557.18
MH62	AGP-53019-2	5/30/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Maintenance hole south of S Nevada Street & 6th Avenue S	1271751.91	209471.76
MH63	CEW-6419-2	6/14/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Detention system at Seattle Radiator, not cleaned in years, 5011 Ohio Avenue S	1268824.39	206628.71
MH64	MKJ-071619-1	7/16/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Dewatering sludge from Denver Avenue S line cleaing, 2nd Avenue S to Colorado Avenue S	1269793.72	208460.00
MH65	AGP-53119-1	5/31/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Maintenance hole in center of 6th Avenue S, at intersection with S Andover Street	1271768.17	210787.68
ODS72	MKJ-052319-3	5/23/2019	SurfDebris	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Moss and dirt in ROW adjacent to building on S Dakota Street @ 654 S Industrial Way (Lacy & Par)	1272199.54	210419.10
ODS73	MKJ-060519-01	6/5/2019	SurfDebris	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Surface dirt on south side of Denver Avenue S, to east of 1st Avenue S	1270095.29	208004.48
ODS74	MKJ-062019-2	6/20/2019	SurfDebris	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	South side of Denver Avenue S, perpendicular to MH D064-072	1269959.04	208219.25
ODS75	MKJ-062019-1	6/20/2019	SurfDebris	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Curb line to west of known PCB hot spot	1270047.00	208104.67
RCB91	MKJ-060519-02	6/5/2019	CB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Catch basin at loading dock (Seattle City Light)	1270711.32	211203.16
RCB92	MKJ-061819-1	6/18/2019	RCB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Catch basin on north side of Denver Avenue S, north of 4786 1st Avenue S	1270152.58	208027.92
RCB93	AGP-53119-2	5/31/2019	RCB Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	ROW catch basin in northwest corner of Airport Way S, S Dakota Street	1272736.88	210481.21
ST09	ST09-050819	5/8/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	In maintenance hole in center of 7th Avenue S and S Snoqualmie Street, in mainline entering from the north, taking flow from 7th Avenue S	1272356.02	208569.68
ST1	ST1-042319	4/23/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Sediment Trap 1: East Marginal Way and S Oregon Street	1268420.84	209048.79
ST1	ST1-042319-G	4/23/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Sediment Trap 1: East Marginal Way and S Oregon Street	1268420.84	209048.79
ST1	MKJ-062519-3	6/25/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	East Marginal Way and S Oregon Street	1268420.84	209048.79
ST1	MKJ-070319-3	7/3/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	East Marginal Way and S Oregon Street	1268420.84	209048.79
ST10	ST10-050819	5/8/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	In maintenance hole incorner of 6th Street and S Alaskan Way, in driveway towards rail transload yard	1271739.35	208296.24
ST2	DIAG-SP-061419-G	6/14/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Airport Way S and S Spokane Street (I-5 southbound RP)	1272836.86	211846.87
ST2 (HAMLIN)	DIAG-SP-HAMLIN-061419	6/14/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Airport Way S and S Spokane Street (I-5 southbound RP)	1272836.86	211846.87
ST2 (RORY)	DIAG-SP-RORY-061419	6/14/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Airport Way S and S Spokane Street (I-5 southbound RP)	1272836.86	211846.87
ST2 (SIFT)	DIAG-SP-SIFT-061419	6/14/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Airport Way S and S Spokane Street (I-5 southbound RP)	1272836.86	211846.87
ST2 (TRENT)	DIAG-SP-TRENT-061419	6/14/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Airport Way S and S Spokane Street (I-5 southbound RP)	1272836.86	211846.87
ST7	ST7-042219	4/22/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	S Dakota Street and 6th Avenue S	1271722.72	210480.65
ST7	ST7-042219-G	4/22/2019	Inline Grab	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	S Dakota Street and 6th Avenue S	1271722.72	210480.65
ST8	DIAG-ST1-070319	7/3/2019	SedTrap	SD	RM 0.1-0.9 East	Diagonal Ave S CSO/SD	Installed in downstream end of maintenance hole junction at S Snoqualmie and Airport Way, upstream of overflow vault	1272599.26	208570.64
MH56	NCH-060619-2	6/6/2019	Inline Grab	SD	RM 0.1-0.9 East	S Nevada St SD	Maintenance hole just east of 44 S Nevada Street, in street center east of hydrant bleeder	1267950.38	210039.92
RCB86	NCH-061919-1	6/19/2019	RCB Grab	SD	RM 0.1-0.9 East	S Nevada St SD	Catch basin in curb in front of Mary's Place, just east of customs building	1267896.54	210012.75
RCB88	NCH-061919-2	6/19/2019	RCB Grab	SD	RM 0.1-0.9 East	S Nevada St SD	Adjacent to two trees and machine shop	1268085.61	210009.63
RCB89	NCH-060619-1	6/6/2019	RCB Grab	SD	RM 0.1-0.9 East	S Nevada St SD	Catch basin has a light trickle into it from a hydrant bleeder	1267892.22	210059.45
RCB200a	NCH-060719-1	6/7/2019	Inline Grab	SD	RM 0.0-1.0 West	SW Dakota St SD	SW Dakota St just east of West Marginal Wy SW	1265107.54	210662.85
ID-ST1	ID-ST1-041519	4/15/2019	SedTrap	SD	RM 0.0-1.0 West	SW Idaho St SD	18th Ave SW and S Hudson St, SPU #598047	1264220.16	206583.52

Appendix F-1.
SPU Source Tracing Sample Locations (2019)

Station ID	Sample No.	Date	Type	Sewer Type	Source Control Area	Outfall	Location	X Coordinate	Y Coordinate
ID-ST2	ID-ST2-041919	4/19/2019	SedTrap	SD	RM 0.0-1.0 West	SW Idaho St SD	SW Idaho Street just east of W Marginal Way S	1265352.84	209905.60
ID-ST3	ID-ST3-041519	4/15/2019	SedTrap	SD	RM 0.0-1.0 West	SW Idaho St SD	North end of 19th Ave SW at SW Dawson St	1263879.13	206423.86

SedTrap - sediment trap
SurfDebris - surface debris/soil around storm drain structure
CB - catch basin
CSO - combined sewer overflow
KCIA - King County International Airport
MH - maintenance hole
SD - storm drain

Appendix F-2.
SPU Source Tracing Results (2019)
(All concentrations in mg/kg except as noted.)

Station ID	Outfall	Date Sampled	Sample Type	Total Organic Carbon (%)	Arsenic	Copper	Lead	Mercury	Zinc	Diesel Range HC*	Motor Oil Range HC*	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCB Aroclors	1-Methyl-naphthalene	2-Methyl-naphthalene	Acenaph-thene	Acenaph-thylene	Anthra-cene	Fluorene	Naphtha-lene
SCO				--	57	390	450	0.41	410	2,000	2,000	--	--	--	--	0.13	--	0.67	0.5	1.3	0.96	0.54	2.1
CSL/RAL/Method A				--	93	390	530	0.59	960	2,000	2,000	--	--	--	--	1.0	--	0.67	0.5	1.3	0.96	0.54	2.1
UPPER REACH																							
MH201	16th Ave S SD (east)	6/5/2019	Grab	18.4	14 U	**230**	**140**	**0.36**	**1,300**	na	**12,000 J**	0.020 U	**0.092**	**0.13**	**0.24**	**0.46**	**0.053 J**	**0.099 J**	**0.031 J**	**0.069 J**	**0.13 J**	**0.11 J**	**0.16 J**
17TH-ST1	17th Ave S SD	5/8/2019	SedTrap	na	na	na	na	na	na	na	na	0.053 U	0.053 U	**0.11**	**0.57**	**0.68**	na	na	na	na	na	na	na
CB334	S Norfolk St CSO/PS17 EOF/SD	5/3/2019	Grab	7.11	**17**	**120**	**58**	**0.043**	**1,000**	na	na	0.019 U	0.019 U	**0.035**	**0.032**	**0.067**	0.088 U	0.084 U	0.076 U	0.071 U	**0.14 J**	**0.092 J**	**0.12 J**
NST1	S Norfolk St CSO/PS17 EOF/SD	4/17/2019	SedTrap	1.51	**11**	**110**	**76**	**0.12**	**710**	na	na	0.020 U	**0.032**	**0.083 J**	**0.048**	**0.16 J**	**0.036 J**	**0.053 J**	**0.064 J**	**0.043 J**	**0.13 J**	**0.064 J**	**0.068 J**
NST1	S Norfolk St CSO/PS17 EOF/SD	4/17/2019	Grab	1.79	6.8 U	**40**	**28**	**0.057**	**210**	na	na	0.020 U	0.020 U	**0.088**	**0.023**	**0.11**	0.018 U	**0.020 J**	**0.026 J**	**0.016 J**	**0.059 J**	**0.033 J**	**0.021 J**
NST3	S Norfolk St CSO/PS17 EOF/SD	4/16/2019	SedTrap	9.61	10 U	**95**	**73**	**0.14**	**460**	na	na	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.030 UJ	**0.074 J**	0.026 UJ	**0.029 J**	**0.27 J**	**0.057 J**	**0.11 J**
NST4	S Norfolk St CSO/PS17 EOF/SD	4/16/2019	SedTrap	7.00	95 U	**110**	**410**	0.10 UJ	**430**	na	na	0.40 U	0.40 U	**0.87 J**	0.40 U	**0.87 J**	0.24 UJ	0.22 UJ	0.20 UJ	0.19 UJ	0.23 UJ	0.20 UJ	0.21 UJ
NST5	S Norfolk St CSO/PS17 EOF/SD	4/16/2019	SedTrap	na	na	na	na	na	na	na	na	0.051 U	0.051 U	**0.31**	**0.18**	**0.49**	na	na	na	na	na	na	na
ODS68	S Norfolk St CSO/PS17 EOF/SD	5/3/2019	Grab	na	**17**	**160**	**100**	**0.18**	**1,800**	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MIDDLE REACH																							
1st-ST8	1st Ave S SD (west)	7/3/2019	SedTrap	14.3	**19**	**160**	**160**	**0.14**	**1,000**	na	na	0.10 U	0.10 U	**0.49**	na	**0.49**	**0.052 J**	**0.14 J**	**0.054 J**	**0.079 J**	**0.18 J**	**0.14 J**	**0.25 J**
1st-ST1	1st Ave S SD (west)	4/15/2019	SedTrap	18.8	**15**	**270**	**110**	**0.25**	**1,600**	na	na	0.02 UJ	**0.039 J**	**0.081 J**	**0.052 J**	**0.17 J**	0.15 UJ	0.14 UJ	0.13 UJ	0.12 UJ	**0.28 J**	0.12 UJ	**0.27 J**
1st-ST2	1st Ave S SD (west)	4/15/2019	SedTrap	na	na	na	na	na	na	na	na	0.025 U	0.025 U	**0.047**	0.025 U	**0.047**	na	na	na	na	na	na	na
1st-ST3	1st Ave S SD (west)	4/16/2019	SedTrap	1.29	6.1 U	**19**	**6.5**	**0.017 J**	**140**	na	na	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.030 UJ	0.028 UJ	0.026 UJ	0.024 UJ	0.030 UJ	0.025 UJ	0.026 UJ
1st-ST3	1st Ave S SD (west)	4/16/2019	Grab	2.35	14 U	**25**	**5.4**	**0.026**	**170**	na	na	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.017 U	0.016 U	0.015 U	0.014 U	**0.032 J**	0.014 U	0.015 U
CB340	1st Ave S SD (west)	5/22/2019	Grab	6.04	17 U	**310 J**	**92 J**	**0.071 J**	**590**	**9,100 J**	**19,000 J**	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.28 J**	**0.36 J**	0.030 UJ	0.028 UJ	**0.21 J**	0.029 UJ	**0.26 J**
ODS69	1st Ave S SD (west)	5/3/2019	Grab	na	na	na	na	na	na	na	na	0.047 U	0.047 U	**8.0**	**5.7**	**14**	na	na	na	na	na	na	na
ODS70	1st Ave S SD (west)	5/3/2019	Grab	na	na	na	na	na	na	na	na	40 U	18,000 R	**58,000 J**	**13,000**	**71,000 J**	na	na	na	na	na	na	na
7TH-ST1	7th Ave S SD	4/22/2019	SedTrap	8.92	**23**	**160**	**86**	**0.15**	**640**	na	na	0.020 U	**0.037**	**0.078**	**0.22**	**0.34**	0.030 UJ	0.028 UJ	0.026 UJ	0.024 UJ	**0.045 J**	0.025 UJ	**0.067 J**
7TH-ST1	7th Ave S SD	4/22/2019	Grab	3.04	**13**	**77**	**48**	**0.18**	**350**	na	na	0.020 U	0.020 U	**0.028**	**0.032**	**0.060**	0.018 U	**0.021 J**	0.015 U	0.014 U	**0.020 J**	0.015 U	**0.032 J**
7TH-ST2	7th Ave S SD	4/17/2019	SedTrap	3.30	8.0 U	**10**	**7.5**	**0.011 J**	**70**	na	na	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.0072 J**	**0.012 J**	0.0051 UJ	0.0048 UJ	**0.0067 J**	0.0049 UJ	**0.017 J**
7TH-ST2	7th Ave S SD	4/17/2019	Grab	0.070	6.0 U	**9.2**	**4.3**	**0.0056 U**	**52**	na	na	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.0057 U	0.0054 U	0.0049 U	0.0046 U	0.0057 U	0.0047 U	0.005 U
7TH-ST3	7th Ave S SD	4/22/2019	SedTrap	14.1	**28**	**100**	**83**	**0.17**	**640**	na	na	0.020 U	0.020 U	0.020 U	**0.033**	**0.033**	0.030 UJ	**0.053 J**	0.026 UJ	0.024 UJ	**0.031 J**	0.025 UJ	**0.085 J**
HP-ST4	Highland Park Wy SW SD	4/19/2019	SedTrap	3.53	6.8 U	**150**	**13**	**0.017 J**	**120**	na	na	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.030 UJ	0.028 UJ	0.026 UJ	0.024 UJ	0.030 UJ	0.025 UJ	0.026 UJ
HP-ST6	Highland Park Wy SW SD	4/19/2019	SedTrap	11.9	**55**	**120**	**170**	**0.22**	**770**	na	na	0.020 U	**0.046**	**0.072**	**0.045**	**0.16**	0.030 UJ	**0.030 J**	**0.13 J**	0.024 UJ	**0.085 J**	**0.14 J**	**0.067 J**
HP-ST6	Highland Park Wy SW SD	4/19/2019	Grab	6.51	15 U	**94**	**130**	**0.26**	**720**	na	na	0.020 U	0.020 U	**0.067 J**	**0.034**	**0.10 J**	**0.020**	**0.025**	**0.17**	0.0047 U	**0.10**	**0.053**	**0.18**
SL4-T6	I-5 SD at Slip 4	4/16/2019	SedTrap	8.03	**12**	**160**	**88**	**0.068 J**	**1,100**	na	na	0.020 U	0.020 U	**0.22**	**0.058**	**0.28**	0.030 UJ	**0.066 J**	0.026 UJ	**0.031 J**	**0.27 J**	**0.063 J**	**0.10 J**
SL4-T6	I-5 SD at Slip 4	4/16/2019	Grab	0.29	15 U	**72**	**230**	**0.022**	**200**	na	na	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.018 U	0.017 U	0.015 U	0.014 U	0.018 U	0.015 U	0.016 U
MH101	S Brighton St SD	10/25/2019	Grab	4.62	**46**	**160**	**110**	**0.27**	**1,000**	na	na	0.020 U	**0.054**	**0.056**	**0.086**	**0.20**	0.030 U	**0.036 J**	**0.026 J**	**0.043 J**	**0.070 J**	**0.038 J**	**0.055 J**
CB349	S Garden St SD	10/25/2019	Grab	12.7	**27**	**590**	**650**	**1.7**	**3,100**	na	na	0.10 U	**1.0**	**1.6**	**4.2**	**6.8**	**0.13**	**0.25**	**0.13**	**0.061 J**	**0.19**	**0.12**	**0.16**
MH211	S River St SD	6/14/2019	Grab	4.90	**17**	**100**	**75**	**0.13**	**440**	na	na	0.020 U	**0.037**	**0.051**	**0.051**	**0.14**	0.030 U	0.028 U	0.026 U	**0.054 J**	**0.22**	**0.032 J**	0.026 U
ODS58	S River St SD	5/23/2019	Grab	5.55	**19**	**130**	**65**	**0.042 J**	**550 J**	na	na	0.020 U	0.020 U	**0.021**	**0.028**	**0.049**	0.028 U	0.027 U	**0.062 J**	0.023 U	**0.40**	**0.098**	0.025 U
KN-ST1	SW Kenny St SD/T115 CSO	4/23/2019	SedTrap	10.0	**27**	**86**	**66**	**0.22**	**500**	na	na	0.020 U	**0.034**	**0.074 J**	**0.045**	**0.15 J**	0.029 U	0.028 U	0.025 U	0.024 U	**0.078 J**	0.024 U	**0.084 J**
LOWER REACH																							
CB176	Diagonal Ave S CSO/SD	4/26/2019	Grab	9.61	**17**	**110**	**66**	**0.082**	**720**	na	na	0.0077 U	**0.023**	**0.085 J**	**0.071**	**0.18 J**	0.089 U	0.085 U	0.077 U	0.071 U	0.089 U	0.074 U	**0.14 J**
CB237	Diagonal Ave S CSO/SD	4/26/2019	Grab	12.3	12 U	**100**	**43**	**0.22**	**1,520**	na	na	0.0078 U	0.0078 U	**0.47**	**0.16**	**0.63**	0.087 U	0.083 U	0.075 U	0.070 U	**0.17 J**	**0.14 J**	**0.30**
CB336	Diagonal Ave S CSO/SD	4/22/2019	Grab	10.7	10 U	**91**	**57**	0.048 UJ	**490**	na	na	0.0080 U	0.0080 U	0.0080 U	**1.4**	**1.4**	0.088 U	**0.13 J**	0.076 U	0.070 U	**0.11 J**	**0.093 J**	**0.12 J**
CB338	Diagonal Ave S CSO/SD	4/11/2019	Grab	19.5	**5.4**	**1,400**	**52**	0.095 U	**505**	na	na	0.020 U	0.020 U	0.020 U	0.023 U	0.050 U	0.079 U	0.075 U	0.068 U	0.063 U	0.079 U	0.066 U	0.070 U
CB339	Diagonal Ave S CSO/SD	4/11/2019	Grab	4.74	**15**	**7,600**	**40**	**0.061**	**2,130**	na	na	0.0079 U	0.0079 U	0.0079 U	0.0091 U	0.020 U	0.0057 U	**0.0092 J**	0.0049 U	0.0046 U	0.0057 U	0.0048 U	**0.014 J**
CB341	Diagonal Ave S CSO/SD	6/12/2019	Grab	10.6	**7.6**	**240**	**77**	**0.43**	**759**	na	na	0.019 U	**0.051 J**	**0.052**	**0.028**	**0.13 J**	**0.095 J**	**0.19**	**0.29**	**0.050 J**	**0.16**	**0.33**	**0.74**
CB342	Diagonal Ave S CSO/SD	6/16/2019	Grab	13.6	**4.3**	**92**	**28**	**0.065 J**	**470**	na	na	0.02 U	0.020 U	**0.022**	0.020 U	**0.022**	0.030 U	**0.066 J**	**0.055 J**	**0.026 J**	**0.080 J**	**0.10**	**0.075 J**
CB343	Diagonal Ave S CSO/SD	6/12/2019	Grab	15.3	**15**	**1,600**	**680**	**1.6**	**1,490**	na	**20,000**	0.038 U	**0.74**	**1.8**	**0.85**	**3.4**	**0.097 J**	**0.18**	**0.38**	**0.37**	**2.0**	**0.97**	**0.31**
CB344	Diagonal Ave S CSO/SD	6/12/2019	Grab	9.14	**14**	**230**	**120**	**0.13**	**1,570**	na	na	0.038 U	0.038 U	**0.22**	**0.53 J**	**0.75 J**	**0.56**	**1.2**	**2.0**	**0.071 J**	**6.2**	**2.1**	**0.64**
CB345	Diagonal Ave S CSO/SD	6/14/2019	Grab	3.60 J	**12**	**840**	**1,700**	0.034 U	**2,210**	**1,400**	**6,700**	0.02 UJ	0.020 UJ	**0.025 J**	**0.038 J**	**0.062 J**	0.034 U	**0.042 J**	**0.041 J**	0.027 U	**0.15**	**0.076 J**	**0.073 J**
MH10	Diagonal Ave S CSO/SD	6/20/2019	Grab	1.16	15 U	**220**	**63**	**0.12 J**	**491**	na	**3,300**	**4.4**	0.20 U	0.20 U	0.20 U	**4.4**	0.030 U	**0.057 J**	0.026 U	0.024 U	**0.12**	**0.075 J**	**0.078 J**

Appendix F-2.
SPU Source Tracing Results (2019)
(All concentrations in mg/kg except as noted.)

Station ID	Outfall	Date Sampled	Sample Type	Total Organic Carbon (%)	Arsenic	Copper	Lead	Mercury	Zinc	Diesel Range HC*	Motor Oil Range HC*	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCB Aroclors	1-Methyl-naphthalene	2-Methyl-naphthalene	Acenaph-thene	Acenaph-thylene	Anthra-cene	Fluorene	Naphtha-lene
SCO				--	57	390	450	0.41	410	2,000	2,000	--	--	--	--	0.13	--	0.67	0.5	1.3	0.96	0.54	2.1
CSL/RAL/Method A				--	93	390	530	0.59	960	2,000	2,000	--	--	--	--	1.0	--	0.67	0.5	1.3	0.96	0.54	2.1
MH18	Diagonal Ave S CSO/SD	5/23/2019	Grab	5.65	**9.6**	**110**	**110**	**0.89**	**394**	na	na	0.047 UJ	**1.6 J**	**1.2 J**	**0.31 J**	**3.1 J**	**0.088 J**	**0.15**	**0.43**	**0.045 J**	**0.53**	**0.39**	**0.26**
MH48	Diagonal Ave S CSO/SD	4/22/2019	Grab	0.54	6.1 U	**37**	**41**	**0.26 J**	**146**	na	na	0.0079 U	0.019 J	**0.032**	**0.015 J**	**0.065 J**	0.0058 U	0.0055 U	0.005 U	0.0046 U	**0.012 J**	0.0048 U	0.0051 U
MH49	Diagonal Ave S CSO/SD	4/11/2019	Grab	34.6	**5.1**	**410**	**160**	**0.18**	**1,050**	na	na	0.024 U	0.024 U	**0.16**	0.027 U	**0.16**	0.092 U	0.088 U	0.079 U	0.074 U	0.092 U	**0.078 J**	**0.084 J**
MH50	Diagonal Ave S CSO/SD	4/11/2019	Grab	0.40	**5.1**	**39**	**23**	**0.10**	**603**	na	na	0.008 U	0.0080 U	0.0080 U	0.0093 U	0.020 U	0.0059 U	0.0057 U	0.0051 U	0.0048 U	0.0059 U	0.0049 U	0.0052 U
MH52	Diagonal Ave S CSO/SD	6/21/2019	Grab	13.1	33 U	**130 J**	**120**	**0.11 J**	**878**	na	na	62 R	0.50 U	0.50 U	**0.96**	**0.96**	**0.072 J**	**0.14**	**0.070 J**	**0.064 J**	**0.18**	**0.081 J**	**0.16**
MH53	Diagonal Ave S CSO/SD	6/21/2019	Grab	4.81	63 U	**61 J**	**43**	**0.027 J**	**328**	na	na	**0.11**	0.051 U	**0.093**	0.051 U	**0.20**	0.030 U	0.029 U	0.026 U	0.024 U	**0.041 J**	0.025 U	0.027 U
MH57	Diagonal Ave S CSO/SD	6/25/2019	Grab	0.74 J	na	na	na	na	na	na	na	**0.079**	0.020 U	0.020 U	0.020 U	**0.079**	na	na	na	na	na	na	na
MH58	Diagonal Ave S CSO/SD	6/25/2019	Grab	0.49	na	na	na	na	na	na	na	**0.31**	0.020 U	0.020 U	0.020 U	**0.31**	na	na	na	na	na	na	na
MH58	Diagonal Ave S CSO/SD	7/3/2019	Grab	1.57	7.2 U	**42**	**28**	**0.026 J**	**207**	na	na	**0.85**	0.0190 U	0.019 U	**0.024**	**0.88**	**0.011 J**	**0.021**	**0.010 J**	**0.0071 J**	**0.026**	**0.0091 J**	**0.019 J**
MH59	Diagonal Ave S CSO/SD	7/3/2019	Grab	2.42	**16**	**58**	**29**	**0.037**	**221**	na	na	**1.2**	0.020 U	0.020 U	**0.026**	**1.2**	**0.012 J**	**0.017 J**	**0.017 J**	**0.013 J**	**0.035**	**0.018 J**	**0.028**
MH61	Diagonal Ave S CSO/SD	5/30/2019	Grab	2.65	**7.7**	**150**	**130**	**0.080**	**665**	na	na	0.0079 U	0.0079 U	0.0079 U	0.0092 U	0.020 U	0.034 U	0.033 U	0.029 U	0.027 U	**0.043 J**	0.028 U	**0.057 J**
MH62	Diagonal Ave S CSO/SD	5/30/2019	Grab	8.21	**20**	**180**	**100**	**0.30**	**785**	na	na	0.0080 U	**0.041**	**0.098 J**	**0.014 J**	**0.15 J**	**0.044 J**	**0.071**	0.015 U	**0.085**	**0.099 J**	**0.055 J**	**0.17**
MH63	Diagonal Ave S CSO/SD	6/14/2019	Grab	14.1 J	**34**	**11,000**	**10,000**	**0.19**	**10,100**	**3,900**	**26,000**	0.019 UJ	**0.043 J**	**0.12 J**	**0.57 J**	**0.73 J**	**0.045 J**	**0.11 J**	0.031 U	**0.084 J**	**0.15**	**0.079 J**	**0.18**
MH64	Diagonal Ave S CSO/SD	7/16/2019	Grab	na	na	na	na	na	na	na	na	**4.9**	0.10 U	**0.95 J**	**0.20**	**6.0 J**	na	na	na	na	na	na	na
MH65	Diagonal Ave S CSO/SD	5/31/2019	Grab	2.22	**12**	**100**	**170**	**0.16**	**331**	na	na	0.0076 UJ	**0.067 J**	**0.088 J**	**0.052 J**	**0.21 J**	0.036 U	**0.045 J**	**0.046 J**	**0.031 J**	**0.15 J**	0.030 U	**0.060 J**
ODS72	Diagonal Ave S CSO/SD	5/23/2019	Grab	11.4	na	na	na	na	na	na	na	0.19 U	0.19 U	**150**	0.36 U	**150**	na	na	na	na	na	na	na
ODS73	Diagonal Ave S CSO/SD	6/5/2019	Grab	na	na	na	na	na	na	na	na	**40,000**	190 U	190 U	370 U	**40,000**	na	na	na	na	na	na	na
ODS74	Diagonal Ave S CSO/SD	6/20/2019	Grab	na	na	na	na	na	na	na	na	**0.97**	0.099 U	0.099 U	0.099 U	**0.97**	na	na	na	na	na	na	na
ODS75	Diagonal Ave S CSO/SD	6/20/2019	Grab	na	na	na	na	na	na	na	na	**4.0**	0.20 U	0.20 U	0.20 U	**4.0**	na	na	na	na	na	na	na
RCB91	Diagonal Ave S CSO/SD	6/5/2019	Grab	na	na	na	na	na	na	na	na	**7,000**	39 U	39 U	75 U	**7,000**	na	na	na	na	na	na	na
RCB92	Diagonal Ave S CSO/SD	6/5/2019	Grab	na	na	na	na	na	na	na	na	**69**	0.45 U	0.45 U	0.86 U	**69**	na	na	na	na	na	na	na
RCB92	Diagonal Ave S CSO/SD	6/18/2019	Grab	na	**7.7 J**	**44 J**	**47**	0.0055 U	192	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB93	Diagonal Ave S CSO/SD	5/31/2019	Grab	4.47	**10**	**88**	**58**	**0.074**	**341**	na	na	0.0079 UJ	0.0079 UJ	**0.039 J**	**0.037 J**	**0.076 J**	0.036 U	**0.062 J**	0.031 U	**0.041 J**	**0.078 J**	**0.062 J**	**0.13**
ST09	Diagonal Ave S CSO/SD	5/8/2019	SedTrap	na	na	na	na	na	na	na	na	0.030 U	**0.11**	**0.11**	**0.069**	**0.28**	**0.030**	na	na	na	na	na	na
ST1	Diagonal Ave S CSO/SD	4/23/2019	SedTrap	10.7	**16**	**150**	**120**	**0.48**	**621**	na	na	0.020 U	**0.96**	**0.40 J**	**0.15**	**1.5 J**	0.030 U	0.028 U	**0.060 J**	**0.035 J**	**0.41**	**0.12**	**0.10**
ST1	Diagonal Ave S CSO/SD	4/23/2019	Grab	0.76	6.4 U	**34**	**40**	**0.022 J**	**160**	na	na	**0.52**	0.019 U	**0.077**	0.019 U	**0.59**	0.0058 U	**0.0061 J**	**0.0081 J**	0.0046 U	**0.021**	**0.014 J**	**0.0061 J**
ST1	Diagonal Ave S CSO/SD	6/25/2019	Grab	0.53	na	na	na	na	na	na	na	**0.19**	0.019 U	0.020 U	0.02 U	**0.19**	na	na	na	na	na	na	na
ST1	Diagonal Ave S CSO/SD	7/3/2019	Grab	1.06	6.2 U	**49**	**30**	**0.051**	**232**	na	na	**0.51**	0.020 U	0.020 U	0.02 U	**0.51**	0.0059 U	0.0056 U	0.0051 U	0.0047 U	**0.019 J**	0.0049 U	**0.0086 J**
ST10	Diagonal Ave S CSO/SD	5/8/2019	SedTrap	na	**15**	**210**	**120**	**0.11**	**1,260**	na	na	0.020 UJ	**0.073 J**	**0.050 J**	**0.14 J**	**0.27 J**	0.052 UJ	**0.20 J**	0.045 UJ	**0.11 J**	**0.16 J**	**0.13 J**	**0.32 J**
ST2	Diagonal Ave S CSO/SD	6/14/2019	Grab	0.52	**450**	**270 J**	**41,000 J**	**0.075 J**	**377 J**	na	na	0.0076 U	0.0076 U	0.0076 U	0.0088 U	0.019 U	0.0059 U	0.0056 U	0.0051 U	0.0047 U	0.0059 U	0.0049 U	0.0052 U
ST2 (RORY)	Diagonal Ave S CSO/SD	6/14/2019	SedTrap	8.10	**7.4 J**	**95 J**	**46 J**	**0.083 J**	**366 J**	na	na	0.0077 U	**0.057**	**0.044**	**0.056**	**0.16**	**0.073 J**	**0.15**	**0.050 J**	**0.042 J**	**0.067 J**	**0.062 J**	**0.16**
ST2 (TRENT)	Diagonal Ave S CSO/SD	6/14/2019	SedTrap	15.4	**15 J**	**220 J**	**100 J**	**0.16 J**	**826 J**	na	na	0.0079 U	**0.095**	**0.060**	**0.058**	**0.21**	**0.13**	**0.24**	0.026 U	**0.061 J**	**0.11**	**0.056 J**	**0.23**
ST2 (SIFT)	Diagonal Ave S CSO/SD	6/14/2019	SedTrap	9.14	**11**	**130 J**	**97 J**	**0.057 J**	**603 J**	na	na	0.0079 U	**0.057**	**0.036**	**0.055 J**	**0.15 J**	**0.067 J**	**0.12**	0.026 U	0.024 U	**0.087 J**	0.025 U	**0.16**
ST2 (HAMLIN)	Diagonal Ave S CSO/SD	6/14/2019	SedTrap	na	na	na	na	na	na	na	na	0.0079 U	**0.024**	**0.019 J**	**0.022 J**	**0.064 J**	na	na	na	na	na	na	na
ST7	Diagonal Ave S CSO/SD	4/22/2019	SedTrap	7.12	**11**	**100**	**69**	**0.10**	**413**	na	na	0.020 U	**0.11**	**0.10 J**	**0.039**	**0.25 J**	**0.037 J**	**0.077 J**	**0.033 J**	**0.030 J**	**0.074 J**	**0.052 J**	**0.13 J**
ST7	Diagonal Ave S CSO/SD	4/22/2019	Grab	0.78	**6.7**	**140**	**19**	**0.026**	**120**	na	na	0.020 U	**0.096**	**0.098**	0.02 U	**0.19**	**0.015 J**	**0.022**	**0.0058 J**	0.0047 U	**0.015 J**	**0.0088 J**	**0.025**
ST8	Diagonal Ave S CSO/SD	7/3/2019	SedTrap	18.8	16 U	**250**	**150**	**0.24**	**1,870**	na	na	0.020 UJ	**0.074 J**	**0.092 J**	**0.045 J**	**0.21 J**	na	na	na	na	na	na	na
MH56	S Nevada St SD	6/6/2019	Grab	23.7	**30**	**100**	**33**	**0.29**	**478**	na	na	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	**0.0095 J**	**0.014 J**	**0.012 J**	0.0047 U	**0.024**	**0.013 J**	**0.017 J**
RCB86	S Nevada St SD	6/19/2019	Grab	4.08	8.8 U	**100**	na	0.092	**590**	na	na	0.020 U	**0.078**	**0.15**	**0.50 J**	**0.73 J**	**0.35 J**	**0.32 J**	**5.2**	**0.41 J**	**8.2**	**4.8**	**0.94**
RCB88	S Nevada St SD	6/19/2019	Grab	0.02 U	**11**	**220**	**68**	**0.072**	**794**	na	**7,100**	0.020 U	**0.046**	**0.062**	**0.082 J**	**0.19 J**	**0.081 J**	**0.12**	**0.37**	**0.043 J**	**0.60**	**0.37**	**0.13**
RCB89	S Nevada St SD	6/6/2019	Grab	2.34	**23**	**160**	**230**	**0.35**	**1,270**	na	na	0.020 U	**0.081**	**0.11**	**0.20**	**0.39**	**0.096 J**	**0.11 J**	**0.52**	0.070 U	**0.95**	**0.58**	0.077 U
RCB200A	SW Dakota St SD/Ditch	6/7/2019	Grab	10.8	**18**	**140**	**110**	**0.26**	**921**	na	na	0.019 U	**0.063**	**0.088 J**	**0.047 J**	**0.20 J**	0.089 U	0.084 U	0.076 U	0.071 U	**0.14 J**	**0.099 J**	0.078 U
ID-ST1	SW Idaho St SD	4/15/2019	SedTrap	2.44	7.1 U	**23**	**9.2**	**0.012 J**	**225**	na	na	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.15 UJ	0.14 UJ	0.13 UJ	0.12 UJ	0.15 UJ	0.12 UJ	0.13 UJ
ID-ST2	SW Idaho St SD	4/19/2019	SedTrap	5.81	9.5 U	**41**	**26**	**0.076**	**311**	na	na	0.020 U	**0.12**	**0.066**	0.020 U	**0.19**	**0.013 J**	**0.015 J**	**0.029 J**	**0.019 J**	**0.047 J**	**0.047 J**	**0.028 J**
ID-ST3	SW Idaho St SD	4/15/2019	SedTrap	na	na	na	na	na	na	na	na	0.020 U	0.020 U	0.020 U	0.020 U	0.020 U	0.048 UJ	0.046 UJ	0.042 UJ	0.039 UJ	0.048 UJ	0.040 UJ	0.043 UJ

Appendix F-2.
SPU Source Tracing Results (2019)
(All concentrations in mg/kg except as noted.)

Station ID	Outfall	Phenan-threne	Total LPAHs	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(g,h,i) perylene	Total Benzo-fluoranthenes	Chrysene	Dibenzo(a,h) anthracene	Fluoran-thene	Indeno (1,2,3-cd) pyrene	Pyrene	Total HPAHs	Total cPAH TEQ	BEHP	Butylbenzyl phthalate	Diethyl phthalate	Dimethyl phthalate	Dibutyl phthalate	Di-n-octyl phthalate	1,2,4-Trichloro benzene	1,4-Dichloro-benzene	2,4-Dinitro toluene
SCO		1.5	5.2	1.3	1.6	0.67	3.2	1.4	0.23	1.7	0.60	2.6	12	1.0	1.3	0.063	0.20	0.071	1.4	6.2	0.031	0.11	na
CSL/RAL/Method A		1.5	5.2	1.6	1.6	0.72	3.6	2.8	0.23	2.5	0.69	3.3	17	1.0	1.9	0.90	1.2	0.16	1.4	6.2	0.051	0.11	na
UPPER REACH																							
MH201	16th Ave S SD (east)	**0.93 J**	**1.4 J**	**0.49 J**	**0.59 J**	**0.46 J**	**1.5 J**	**1.2 J**	0.031 UJ	**1.8 J**	**0.22 J**	**2.3 J**	**8.6 J**	**0.82 J**	**29 J**	0.040 UJ	0.089 UJ	**0.13 J**	**0.15 J**	0.044 UJ	0.030 UJ	0.022 UJ	0.11 UJ
17TH-ST1	17th Ave S SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
CB334	S Norfolk St CSO/PS17 EOF/SD	**0.68**	**1.0 J**	**0.40**	**0.44**	**0.39**	**1.2**	**0.86**	0.091 U	**1.2**	**0.23 J**	**1.2**	**5.9**	**0.64 J**	**7.3**	**0.21 J**	0.26 U	0.095 U	**0.27 J**	**0.19 J**	0.088 U	0.065 U	0.34 U
NST1	S Norfolk St CSO/PS17 EOF/SD	**0.65 J**	**1.0 J**	**0.51 J**	**0.66 J**	**0.41 J**	**1.6 J**	**1.0 J**	**0.13 J**	**1.7 J**	**0.33 J**	**1.7 J**	**7.9 J**	**0.92 J**	**10 J**	**0.16 J**	0.089 UJ	0.032 UJ	**0.29 J**	**3.0 J**	0.030 UJ	0.022 UJ	0.11 UJ
NST1	S Norfolk St CSO/PS17 EOF/SD	**0.26**	**0.42 J**	**0.22**	**0.29**	**0.22**	**0.59**	**0.39**	**0.055 J**	**0.69**	**0.15**	**0.67**	**3.3 J**	**0.40 J**	**3.1**	**0.051 J**	0.053 U	0.019 U	**0.034 J**	**0.73**	**0.042 J**	0.013 U	**0.14 J**
NST3	S Norfolk St CSO/PS17 EOF/SD	**0.56 J**	**1.0 J**	**0.44 J**	**0.38 J**	**0.32 J**	**0.91 J**	**0.74 J**	**0.077 J**	**1.5 J**	**0.20 J**	**1.4 J**	**6.0 J**	**0.55 J**	**16 J**	**0.43 J**	0.088 UJ	**0.11 J**	**0.26 J**	**0.73 J**	0.030 UJ	0.022 UJ	0.11 UJ
NST4	S Norfolk St CSO/PS17 EOF/SD	0.19 UJ	0.19 UJ	**0.25 J**	**0.36 J**	**0.59 J**	**1.0 J**	**0.41 J**	0.24 UJ	**0.43 J**	**0.37 J**	**0.47 J**	**3.9 J**	**0.54 J**	**2.1 J**	0.32 UJ	0.70 UJ	0.26 UJ	**1.3 J**	0.35 UJ	0.24 UJ	0.17 UJ	0.91 UJ
NST5	S Norfolk St CSO/PS17 EOF/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS68	S Norfolk St CSO/PS17 EOF/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MIDDLE REACH																							
1st-ST8	1st Ave S SD (west)	**1.5 J**	**2.2 J**	**0.92 J**	**1.2 J**	**0.62 J**	**3.5 J**	**1.9 J**	**0.12 J**	**3.5 J**	**0.43 J**	**3.2 J**	**15 J**	**1.7 J**	**14 J**	0.040 U	0.089 U	0.032 U	**0.075 J**	**0.98 J**	0.030 U	0.022 U	0.12 U
1st-ST1	1st Ave S SD (west)	**0.98 J**	**1.5 J**	**0.46 J**	**0.66 J**	**1.1 J**	**1.4 J**	**1.1 J**	0.15 UJ	**1.5 J**	**0.38 J**	**2.0 J**	**8.6 J**	**0.90 J**	**15 J**	**0.44 J**	0.44 UJ	0.16 UJ	**0.32 J**	**0.98 J**	0.15 UJ	0.11 UJ	0.57 UJ
1st-ST2	1st Ave S SD (west)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
1st-ST3	1st Ave S SD (west)	**0.077 J**	**0.077 J**	**0.066 J**	**0.099 J**	**0.11 J**	**0.25 J**	**0.16 J**	0.031 UJ	**0.26 J**	**0.083 J**	**0.22 J**	**1.2 J**	**0.14 J**	**0.63 J**	0.040 UJ	0.088 UJ	0.032 UJ	**0.15 J**	0.044 UJ	0.030 UJ	0.022 UJ	0.11 UJ
1st-ST3	1st Ave S SD (west)	**0.17**	**0.20 J**	**0.19**	**0.22**	**0.14**	**0.49**	**0.32**	**0.031 J**	**0.63**	**0.11**	**0.50**	**2.6 J**	**0.31 J**	**0.66**	**0.070**	0.051 U	0.019 U	**0.015 U**	0.025 U	**0.045 J**	0.013 U	**0.10 J**
CB340	1st Ave S SD (west)	**1.6 J**	**2.1 J**	**1.2 J**	**1.4 J**	**0.47 J**	**3.1 J**	**2.0 J**	**0.13 J**	**3.2 J**	**0.46 J**	**3.4 J**	**15 J**	**1.9 J**	**38 J**	0.048 UJ	0.10 UJ	0.038 UJ	**0.36 J**	0.051 UJ	0.035 UJ	0.026 UJ	0.14 UJ
ODS69	1st Ave S SD (west)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS70	1st Ave S SD (west)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
7TH-ST1	7th Ave S SD	**0.23 J**	**0.34 J**	**0.16 J**	**0.22 J**	**0.21 J**	**0.53 J**	**0.45 J**	0.031 UJ	**0.54 J**	**0.13 J**	**0.69 J**	**2.9 J**	**0.31 J**	**7.0 J**	**0.25 J**	0.088 UJ	0.032 UJ	**0.31 J**	**0.26 J**	0.030 UJ	0.022 UJ	0.11 UJ
7TH-ST1	7th Ave S SD	**0.10**	**0.15 J**	**0.061**	**0.093**	**0.13**	**0.23**	**0.19**	0.018 U	**0.21**	**0.050 J**	**0.26**	**1.2 J**	**0.13 J**	**2.9**	**0.11**	**0.054 J**	0.019 U	**0.048 J**	**0.17**	0.018 U	0.013 U	0.068 U
7TH-ST2	7th Ave S SD	**0.025 J**	**0.049 J**	**0.013 J**	**0.014 J**	0.0058 UJ	**0.032 J**	**0.026 J**	0.0062 UJ	**0.037 J**	**0.0083 J**	**0.035 J**	**0.17 J**	**0.020 J**	**0.57 J**	0.0080 UJ	**0.019 J**	0.0064 UJ	**0.024 J**	0.0087 UJ	0.0060 UJ	0.0044 UJ	0.023 UJ
7TH-ST2	7th Ave S SD	0.0045 U		**0.0057 J**	0.0062 U	0.0056 U	0.0098 U	**0.011 J**	0.0059 U	0.0043 U	0.0057 U	**0.0053 J**	**0.022 J**	**0.0049 J**	0.028 U	0.0077 U	0.017 U	0.0062 U	0.0051 U	0.0084 U	0.0057 U	0.0042 U	0.022 U
7TH-ST3	7th Ave S SD	**0.20 J**	**0.32 J**	**0.15 J**	**0.18 J**	**0.28 J**	**0.47 J**	**0.36 J**	**0.058 J**	**0.40 J**	**0.14 J**	**0.50 J**	**2.5 J**	**0.27 J**	**5.4 J**	**0.22 J**	0.088 UJ	0.032 UJ	**0.38 J**	**0.095 J**	0.030 UJ	0.022 UJ	0.11 UJ
HP-ST4	Highland Park Wy SW SD	**0.061 J**	**0.061 J**	**0.033 J**	**0.054 J**	0.029 UJ	**0.16 J**	**0.095 J**	0.031 UJ	**0.12 J**	0.030 UJ	**0.16 J**	**0.62 J**	**0.077 J**	**11 J**	0.040 UJ	0.088 UJ	0.032 UJ	**0.17 J**	**0.24 J**	0.030 UJ	0.022 UJ	0.11 UJ
HP-ST6	Highland Park Wy SW SD	**0.21 J**	**0.63 J**	**0.14 J**	**0.18 J**	**0.15 J**	**0.49 J**	**0.40 J**	**0.053 J**	**0.64 J**	**0.091 J**	**0.75 J**	**2.9 J**	**0.26 J**	**4.5 J**	**0.24 J**	0.089 UJ	**0.12 J**	**0.20 J**	**0.24 J**	0.030 UJ	0.022 UJ	0.11 UJ
HP-ST6	Highland Park Wy SW SD	**0.18**	**0.68**	**0.19**	**0.20**	**0.14**	**0.53**	**0.31**	**0.023**	**0.29**	**0.067**	**0.64**	**2.4**	**0.28**	**3.9**	**0.16**	**0.021**	**0.12**	**0.034**	0.0085 U	0.0058 U	**0.018 J**	0.022 U
SL4-T6	I-5 SD at Slip 4	**0.57 J**	**1.0 J**	**0.43 J**	**0.39 J**	**0.34 J**	**0.90 J**	**0.71 J**	**0.066 J**	**1.4 J**	**0.22 J**	**1.4 J**	**5.9 J**	**0.56 J**	**16 J**	**0.41 J**	0.088 UJ	**0.12 J**	**0.27 J**	**0.73 J**	0.030 UJ	0.022 UJ	0.11 UJ
SL4-T6	I-5 SD at Slip 4	0.014 U	0.014 U	0.015 U	**0.020 J**	**0.051 J**	**0.045 J**	**0.037 J**	0.018 U	**0.041 J**	**0.035 J**	**0.039 J**	**0.27 J**	**0.030 J**	**0.25**	0.024 U	0.053 U	0.019 U	0.016 U	0.026 U	**0.046 J**	0.013 U	**0.10 J**
MH101	S Brighton St SD	**0.31**	**0.54 J**	**0.17**	**0.22**	**0.37**	**0.61**	**0.42**	**0.037 J**	**0.62 J**	**0.20**	**0.63**	**3.3 J**	**0.33 J**	**5.0**	**0.36**	0.088 U	**0.063 J**	**0.24**	**0.20**	0.030 U	0.022 U	0.11 U
CB349	S Garden St SD	**0.85**	**1.5 J**	**0.46**	**0.34**	**0.26**	**1.1**	**1.1**	**0.047 J**	**1.4 J**	**0.17**	**1.4**	**6.3 J**	**0.53 J**	**30**	**0.99**	0.088 U	**0.39**	**0.36**	**2.1**	0.030 U	**0.025 J**	0.11 U
MH211	S River St SD	**0.45**	**0.75 J**	**0.85**	**0.96**	**0.62**	**2.5**	**1.5**	**0.18**	**2.4**	**0.49**	**2.3**	**12**	**1.4**	**4.2**	**0.20**	0.088 U	**0.19**	**0.057 J**	**0.16**	0.030 U	0.022 U	0.11 U
ODS58	S River St SD	**3.1**	**3.6 J**	**3.4**	**3.2**	**1.5**	**6.9**	**4.7**	**0.49**	12 R	**1.5**	**9.3**	**31**	**4.6**	**1.9**	**0.17**	0.084 U	**0.58**	0.025 U	**0.11**	0.028 U	0.021 U	0.11 U
KN-ST1	SW Kenny St SD/T115 CSO	**0.30**	**0.47 J**	**0.23**	**0.26**	**0.41**	**0.98**	**0.61**	**0.097 J**	**0.68**	**0.28**	**0.75**	**4.3 J**	**0.42 J**	**4.4**	**0.19**	0.087 U	0.032 U	0.026 U	**0.20**	0.029 U	0.022 U	0.11 U
LOWER REACH																							
CB176	Diagonal Ave S CSO/SD	**0.71**	**0.85 J**	**0.29 J**	**0.32**	**0.45**	**0.77**	**0.70**	0.092 U	**1.0**	**0.26 J**	**0.99**	**4.8 J**	**0.46 J**	**11**	**0.23 J**	0.26 U	0.096 U	**0.12 J**	**0.16 J**	0.089 U	0.066 U	0.34 U
CB237	Diagonal Ave S CSO/SD	**1.1**	**1.7 J**	**0.57**	**0.61**	**0.71**	**1.8**	**1.2**	**0.28 J**	**1.8**	**0.37**	**1.7**	**9.1 J**	**0.92 J**	**48**	**1.8**	0.26 U	0.095 U	**0.34**	**0.37**	0.088 U	0.065 U	0.34 U
CB336	Diagonal Ave S CSO/SD	**0.70**	**1.0 J**	**0.25 J**	**0.38**	**0.42**	**0.84**	**0.87**	0.091 U	**1.0**	**0.16 J**	**0.95**	**4.9 J**	**0.52 J**	**7.3**	0.12 U	0.26 U	0.095 U	**0.19 J**	0.13 U	0.088 U	0.065 U	0.34 U
CB338	Diagonal Ave S CSO/SD	**0.16 J**	**0.16 J**	**0.11 J**	**0.17 J**	**0.20 J**	**0.29 J**	**0.31**	0.082 U	**0.25 J**	**0.11 J**	**0.32**	**1.8 J**	**0.23 J**	**8.8**	0.11 U	0.24 U	0.086 U	**0.17 J**	**0.13 J**	**0.21 J**	0.058 U	**0.52 J**
CB339	Diagonal Ave S CSO/SD	**0.016 J**	**0.030 J**	**0.013 J**	**0.040**	**0.030**	**0.089**	**0.036**	**0.0092 J**	**0.032**	**0.021**	**0.029**	**0.30 J**	**0.054 J**	**1.5**	**0.13**	0.017 U	**0.011 J**	**0.30**	0.0084 U	0.0057 U	0.0042 U	0.022 U
CB341	Diagonal Ave S CSO/SD	**1.4**	**3.0 J**	**0.39**	**0.41**	**0.38**	**1.1**	**1.1**	0.031 U	**1.8 J**	**0.20**	**1.7 J**	**7.1 J**	**0.59**	**27**	**0.84**	0.088 U	**0.29**	0.026 U	**0.63**	0.030 U	0.022 U	0.11 U
CB342	Diagonal Ave S CSO/SD	**0.61**	**0.95 J**	**0.25**	**0.29**	**0.23**	**0.57**	**0.52**	0.031 U	**0.98 J**	**0.14**	**1.0 J**	**4.0 J**	**0.39**	**8.3**	**1.4**	0.088 U	0.032 U	**0.044 J**	**0.34**	0.030 U	0.022 U	0.11 U
CB343	Diagonal Ave S CSO/SD	**8.3**	**12**	**3.8**	**4.1**	**1.4**	**8.9**	**9.2**	**0.55**	**18 J**	**1.2**	**16 J**	**63 J**	**5.6**	75 R	**0.96**	0.088 U	**0.28**	**0.25**	**7.7**	0.030 U	0.022 U	0.11 U
CB344	Diagonal Ave S CSO/SD	19 R	**11**	11 R	9.7 R	**2.3**	18 R	12 R	**1.2**	**31 J**	**2.4**	**24 J**	**61 J**	**0.36 J**	85 R	0.040 U	0.088 U	0.032 U	**0.36**	**1.3**	0.030 U	0.022 U	0.11 U
CB345	Diagonal Ave S CSO/SD	**0.79**	**1.1 J**	**0.45 J**	**0.39 J**	**0.24**	**0.99**	**0.77 J**	**0.057 J**	**1.4 J**	**0.16**	**1.3 J**	**5.8 J**	**0.56 J**	**34**	**1.1**	0.10 U	**0.061 J**	**0.19**	0.050 U	0.034 U	0.025 U	0.13 U
MH10	Diagonal Ave S CSO/SD	**0.55**	**0.82 J**	**0.40**	**0.37**	**0.41**	**0.82**	**0.77**	**0.075 J**	**1.2**	**0.23**	**1.3**	**5.6 J**	**0.53 J**	**5.0**	0.040 U	0.088 U	**0.081 J**	**0.054 J**	0.044 U	0.030 U	0.022 U	0.11 U

Appendix F-2.
SPU Source Tracing Results (2019)
(All concentrations in mg/kg except as noted.)

Station ID	Outfall	Phenan-threne	Total LPAHs	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(g,h,i) perylene	Total Benzo-fluoranthenes	Chrysene	Dibenzo(a,h) anthracene	Fluoran-thene	Indeno (1,2,3-cd) pyrene	Pyrene	Total HPAHs	Total cPAH TEQ	BEHP	Butylbenzyl phthalate	Diethyl phthalate	Dimethyl phthalate	Dibutyl phthalate	Di-n-octyl phthalate	1,2,4-Trichloro benzene	1,4-Dichloro-benzene	2,4-Dinitro toluene
SCO		1.5	5.2	1.3	1.6	0.67	3.2	1.4	0.23	1.7	0.60	2.6	12	1.0	1.3	0.063	0.20	0.071	1.4	6.2	0.031	0.11	na
CSL/RAL/Method A		1.5	5.2	1.6	1.6	0.72	3.6	2.8	0.23	2.5	0.69	3.3	17	1.0	1.9	0.90	1.2	0.16	1.4	6.2	0.051	0.11	na
MH18	Diagonal Ave S CSO/SD	**2.7**	**4.4 J**	**1.1**	**1.1**	**0.60**	**2.1**	**1.5**	**0.19**	**3.7**	**0.50**	**3.3**	**14**	**1.5**	**5.8**	**0.15**	0.088 U	0.032 U	**0.16**	0.043 U	0.030 U	**0.054 J**	0.11 U
MH48	Diagonal Ave S CSO/SD	**0.066**	**0.078 J**	**0.053**	**0.073**	**0.052**	**0.15**	**0.095**	0.0060 U	**0.15**	**0.035**	**0.13**	**0.74**	**0.098**	**0.39**	**0.11**	0.017 U	0.0062 U	**0.050**	0.0085 U	0.0058 U	0.0043 U	0.022 U
MH49	Diagonal Ave S CSO/SD	**0.25 J**	**0.41 J**	**0.17 J**	**0.15 J**	**0.29 J**	**0.53 J**	**0.39**	0.095 U	**0.39**	**0.17 J**	**0.54**	**2.6 J**	**0.25 J**	**9.9**	0.12 U	0.27 U	0.099 U	**0.099 J**	**0.16 J**	**0.25 J**	0.068 U	**0.61 J**
MH50	Diagonal Ave S CSO/SD	**0.0074 J**	**0.0074 J**	**0.0059 J**	**0.0071 J**	**0.021**	0.010 U	**0.029**	0.0062 U	**0.016 J**	**0.010 J**	**0.020**	**0.11 J**	**0.0098 J**	**0.86**	**0.036**	0.018 U	0.0064 U	**0.014 J**	0.0087 U	0.0060 U	0.0044 U	0.023 U
MH52	Diagonal Ave S CSO/SD	**0.54**	**1.1 J**	**0.55**	**0.66**	**0.41**	**1.5**	**1.4**	**0.13**	**1.9**	**0.30**	**1.8**	**8.6**	**0.92**	**7.3**	0.040 U	0.088 U	**0.060 J**	**0.16**	0.044 U	0.030 U	0.022 U	0.11 U
MH53	Diagonal Ave S CSO/SD	**0.16**	**0.20 J**	**0.14**	**0.18**	**0.19**	**0.36**	**0.26**	0.031 U	**0.29**	**0.11**	**0.40**	**1.9**	**0.25**	**2.1**	**0.18**	**0.17**	0.033 U	**0.061 J**	0.045 U	0.030 U	0.022 U	0.12 U
MH57	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MH58	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MH58	Diagonal Ave S CSO/SD	**0.091**	**0.16 J**	**0.079**	**0.098**	**0.054**	**0.25**	**0.16**	0.0062 U	**0.26**	**0.034**	**0.25**	**1.2**	**0.14**	**1.2**	**0.12**	0.018 U	0.0064 U	**0.015 J**	**0.45**	0.0060 U	0.0044 U	0.023 U
MH59	Diagonal Ave S CSO/SD	**0.14**	**0.25 J**	**0.11**	**0.14**	**0.11**	**0.36**	**0.20**	**0.012 J**	**0.37**	**0.067**	**0.37**	**1.7 J**	**0.20 J**	**2.0**	**0.41**	0.018 U	0.0064 U	**0.037**	**0.11**	0.0059 U	**0.0095 J**	0.023 U
MH61	Diagonal Ave S CSO/SD	**0.18 J**	**0.28 J**	**0.10 J**	**0.15 J**	**0.24 J**	**0.31**	**0.23 J**	**0.045 J**	**0.35 J**	**0.14 J**	**0.45 J**	**2.0 J**	**0.21 J**	**7.7 J**	**0.42**	0.10 U	**0.11 J**	**0.055 J**	**0.064 J**	0.034 U	0.025 U	0.13 U
MH62	Diagonal Ave S CSO/SD	**0.50 J**	**0.91 J**	**0.28 J**	**0.37 J**	**0.43 J**	**0.91**	**0.60 J**	**0.061**	**0.93 J**	**0.18 J**	**1.4 J**	**5.2 J**	**0.52 J**	**4.6 J**	**1.5**	0.052 U	0.019 U	**0.19 J**	**0.12**	0.017 U	0.013 U	0.067 U
MH63	Diagonal Ave S CSO/SD	**0.87**	**1.4 J**	**0.69 J**	**0.54 J**	**0.34**	0.061 U	**1.4 J**	**0.10 J**	**1.9 J**	**0.21**	**2.0 J**	**7.2 J**	**0.66 J**	**59**	**0.81**	0.11 U	**0.22**	**0.68**	**0.44**	0.036 U	0.026 U	0.14 U
MH64	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MH65	Diagonal Ave S CSO/SD	**0.21 J**	**0.50 J**	**0.95 J**	**0.73 J**	**0.38 J**	**0.92**	**1.3 J**	**0.15**	**0.80 J**	**0.20 J**	**2.6 J**	**8.0 J**	**0.97 J**	**3.0 J**	**0.23**	0.11 U	0.038 U	**0.080 J**	**0.26**	0.036 U	0.026 U	0.14 U
ODS72	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS73	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS74	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS75	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB91	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB92	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB92	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB93	Diagonal Ave S CSO/SD	**0.42 J**	**0.73 J**	**0.27 J**	**0.28 J**	**0.31 J**	**0.70**	**0.73 J**	**0.079 J**	**0.93 J**	**0.17 J**	**1.2 J**	**4.7 J**	**0.41 J**	**8.6 J**	**7.1**	0.11 U	0.039 U	**0.061 J**	**0.39**	0.036 U	0.026 U	0.14 U
ST09	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ST1	Diagonal Ave S CSO/SD	**0.95**	**1.7 J**	**0.57**	**0.48**	**0.37**	**1.1**	**0.97**	**0.10**	**1.9**	**0.25**	**1.7**	**7.4**	**0.69**	**7.5**	0.040 U	0.088 U	0.032 U	**0.089 J**	**0.67**	0.030 U	0.022 U	0.11 U
ST1	Diagonal Ave S CSO/SD	**0.28**	**0.33 J**	**0.18**	**0.22**	**0.15**	**0.48**	**0.33**	**0.046**	**0.69**	**0.14**	**0.54**	**2.8**	**0.31**	**0.92**	0.0078 U	0.017 U	0.0062 U	**0.025**	0.0084 U	0.0058 U	0.0042 U	0.022 U
ST1	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ST1	Diagonal Ave S CSO/SD	**0.11**	**0.14 J**	**0.099**	**0.11**	**0.065**	**0.27**	**0.18**	**0.018 J**	**0.31**	**0.045**	**0.30**	**1.4 J**	**0.15 J**	**1.4**	0.0080 U	**0.10**	0.0064 U	**0.0096 J**	**0.072**	0.0059 U	**0.0052 J**	0.023 U
ST10	Diagonal Ave S CSO/SD	**1.2 J**	**1.9 J**	**0.57 J**	**0.49 J**	**0.55 J**	**1.3 J**	**1.4 J**	**0.085 J**	**2.0 J**	**0.26 J**	**2.5 J**	**9.1 J**	**0.73 J**	**11 J**	**0.19 J**	0.15 UJ	**0.12 J**	**0.046 UJ**	**0.56 J**	0.052 UJ	0.038 UJ	0.20 UJ
ST2	Diagonal Ave S CSO/SD	**0.0096 J**	**0.0096 J**	**0.0082 J**	**0.014 J**	**0.014 J**	**0.027 J**	**0.022**	0.0061 U	**0.027**	0.0059 U	**0.035**	**0.15 J**	**0.018 J**	**0.44**	0.008 U	0.018 U	0.0064 U	**0.058**	**0.0095 J**	0.0059 U	0.0043 U	0.023 U
ST2 (RORY)	Diagonal Ave S CSO/SD	**0.49**	**0.87 J**	**0.26**	**0.26**	**0.29**	**0.64**	**0.53**	**0.056 J**	**1.0**	**0.14**	**1.3**	**4.5 J**	**0.37 J**	**12**	**0.48**	**0.16**	**0.092 J**	**0.13**	**1.3**	0.030 U	0.022 U	0.11 U
ST2 (TRENT)	Diagonal Ave S CSO/SD	**0.59**	**1.0 J**	**0.33**	**0.32**	**0.28**	**0.80**	**0.65**	0.031 U	**1.2**	**0.13**	**1.8**	**5.5**	**0.45**	**22**	**0.46**	0.088 U	**0.21**	**0.10**	**1.4**	0.030 U	0.022 U	0.11 U
ST2 (SIFT)	Diagonal Ave S CSO/SD	**0.48**	**0.73 J**	**0.26**	**0.28**	**0.30**	**0.60**	**0.54**	**0.060 J**	**1.1**	**0.13**	**1.3**	**4.6 J**	**0.39 J**	**12**	**0.48**	0.088 U	**0.12**	**0.12**	**0.89**	0.030 U	0.022 U	0.11 U
ST2 (HAMLIN)	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ST7	Diagonal Ave S CSO/SD	**0.35 J**	**0.67 J**	**0.19 J**	**0.24 J**	**0.21 J**	**0.51 J**	**0.37 J**	**0.040 J**	**0.62 J**	**0.12 J**	**0.76 J**	**3.1 J**	**0.33 J**	**11 J**	0.039 UJ	0.087 UJ	**0.40 J**	**0.26 J**	**0.52 J**	0.029 UJ	0.022 UJ	0.11 UJ
ST7	Diagonal Ave S CSO/SD	**0.076**	**0.13 J**	**0.037**	**0.044**	**0.044**	**0.11**	**0.076**	0.0060 U	**0.15**	**0.021**	**0.14**	**0.62**	**0.062**	**4.3**	0.0079 U	**0.029**	**0.15**	**0.011 J**	**0.19**	0.0058 U	0.0043 U	0.022 U
ST8	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MH56	S Nevada St SD	**0.13**	**0.20 J**	**0.062**	**0.058 J**	**0.027**	**0.11**	**0.095**	0.0061 U	**0.24 J**	**0.026**	**0.18 J**	**0.80 J**	**0.079 J**	**1.1**	0.0080 U	0.018 U	0.0064 U	0.0053 U	0.0087 U	0.0059 U	0.0087 U	0.023 U
RCB86	S Nevada St SD	**76**	**96**	**29**	**30**	**18**	**57**	**35**	**4.6**	**130**	**17**	**100**	**420**	**41**	**9.0**	**3.1**	0.44 U	0.16 U	0.13 U	**0.46 J**	0.15 U	0.11 U	0.57 U
RCB88	S Nevada St SD	**4.7**	**6.2 J**	**1.7**	**1.9**	**0.90**	**3.7**	**2.6**	**0.27**	**6.9**	**0.78**	**5.6**	**24**	**2.6**	**19**	0.040 U	0.088 U	0.032 U	**0.84**	**0.83**	0.030 U	0.022 U	0.11 U
RCB89	S Nevada St SD	**7.8**	**9.8**	**3.0**	**3.3 J**	**2.1**	**6.4**	**4.2**	**0.72**	**15 J**	**1.7**	**11 J**	**47 J**	**4.5 J**	**28**	**2.2**	0.26 U	0.094 U	**0.59**	**1.9**	0.087 U	0.064 U	0.34 U
RCB200A	SW Dakota St SD/Ditch	**0.63**	**0.87 J**	**0.38**	**0.46 J**	**0.42**	**1.2**	**0.91**	0.092 U	**1.8 J**	**0.24 J**	**1.7 J**	**7.1 J**	**0.66 J**	**13**	**0.49**	0.26 U	**0.17 J**	**0.24 J**	**0.88**	0.089 U	0.065 U	0.34 U
ID-ST1	SW Idaho St SD	**0.61 J**	**0.61 J**	**0.29 J**	**0.35 J**	**0.56 J**	**0.90 J**	**0.74 J**	0.15 UJ	**1.1 J**	0.15 UJ	**1.3 J**	**5.2 J**	**0.49 J**	**9.8 J**	**3.4 J**	0.44 UJ	0.16 UJ	**2.1 J**	**0.69 J**	0.15 UJ	0.11 UJ	0.57 UJ
ID-ST2	SW Idaho St SD	**0.38 J**	**0.55 J**	**0.13 J**	**0.16 J**	**0.094 J**	**0.44 J**	**0.26 J**	**0.025 J**	**0.47 J**	**0.084 J**	**0.45** J	**2.1 J**	**0.23 J**	**1.1 J**	**4.0 J**	0.018 UJ	0.0064 UJ	**0.13 J**	**0.27 J**	0.0060 UJ	0.0044 UJ	0.023 UJ
ID-ST3	SW Idaho St SD	0.038 UJ	0.038 UJ	**0.049 J**	**0.083 J**	**0.053 J**	**0.23 J**	**0.10 J**	0.050 UJ	**0.092 J**	**0.063 J**	**0.095 J**	**0.77 J**	**0.12 J**	**0.74 J**	**0.073 J**	0.14 UJ	0.052 UJ	**0.62 J**	0.071 UJ	0.048 UJ	0.036 UJ	0.19 UJ

Appendix F-2.
SPU Source Tracing Results (2019)
(All concentrations in mg/kg except as noted.)

Station ID	Outfall	2,6-Dinitro toluene	2-Chloro naphthalene	2-Methyl phenol	4-Methyl-phenol	Benzoic acid	Benzyl alcohol	Carbazole	Dibenzo-furan	Iso-phorone	Hexachloro benzene	Hexachloro butadiene	Nitro benzene	n-Nitroso-diphenyl-amine	Pentachloro-phenol	Phenol
SCO		na	na	0.063	0.67	0.65	0.057	--	0.54	--	0.022	0.011	na	0.028	0.36	0.42
CSL/RAL/Method A		na	na	0.063	0.67	0.65	0.073	--	0.54	--	0.070	0.12	na	0.040	0.69	1.2
UPPER REACH																
MH201	16th Ave S SD (east)	0.13 UJ	0.022 UJ	**0.82 J**	**0.38 J**	**1.1 J**	**2.7 J**	0.037 UJ	0.023 UJ	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	**0.15 J**	0.16 UJ	**0.55 J**
17TH-ST1	17th Ave S SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
CB334	S Norfolk St CSO/PS17 EOF/SD	0.40 U	0.066 U	0.12 U	**0.54**	0.87 U	0.22 U	**0.18 J**	0.068 U	0.12 U	0.070 U	0.074 U	0.12 U	0.14 U	0.46 U	**0.25 J**
NST1	S Norfolk St CSO/PS17 EOF/SD	0.13 UJ	0.022 UJ	0.039 UJ	**0.11 J**	**0.40 J**	**0.46 J**	**0.094 J**	**0.047 J**	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	0.048 UJ	0.16 UJ	**0.12 J**
NST1	S Norfolk St CSO/PS17 EOF/SD	**0.14 J**	**0.093**	0.024 U	0.044 U	0.18 UJ	**0.052 J**	**0.15**	**0.016 J**	**0.062**	**0.10**	**0.031 J**	**0.31 J**	0.029 U	0.094 U	**0.054 J**
NST3	S Norfolk St CSO/PS17 EOF/SD	0.13 UJ	0.022 UJ	0.039 UJ	**1.3 J**	**0.74 J**	**0.24 J**	**0.13 J**	**0.040 J**	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	0.048 UJ	0.16 UJ	**0.36 J**
NST4	S Norfolk St CSO/PS17 EOF/SD	1.1 UJ	0.18 UJ	0.31 UJ	0.58 UJ	2.3 UJ	0.59 UJ	0.29 UJ	0.18 UJ	0.31 UJ	0.19 UJ	0.20 UJ	0.31 UJ	0.38 UJ	1.2 UJ	0.33 UJ
NST5	S Norfolk St CSO/PS17 EOF/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS68	S Norfolk St CSO/PS17 EOF/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MIDDLE REACH																
1st-ST8	1st Ave S SD (west)	0.13 U	0.022 U	0.039 U	**1.8 J**	**3.2 J**	**0.94 J**	**0.24 J**	**0.057 J**	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	0.041 U
1st-ST1	1st Ave S SD (west)	0.67 UJ	0.11 UJ	0.20 UJ	**0.89 J**	**2.5 J**	**1.4 J**	0.18 UJ	0.12 UJ	0.19 UJ	0.12 UJ	0.13 UJ	0.20 UJ	0.24 UJ	0.78 UJ	**0.50 J**
1st-ST2	1st Ave S SD (west)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
1st-ST3	1st Ave S SD (west)	0.13 UJ	0.022 UJ	**0.21 J**	**0.19 J**	0.30 UJ	0.074 UJ	0.037 UJ	0.023 UJ	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	0.048 UJ	0.16 UJ	**0.054 J**
1st-ST3	1st Ave S SD (west)	**0.12 J**	**0.091**	0.023 U	**0.11**	**0.27 J**	**0.066**	**0.15**	0.013 U	0.062	**0.097**	**0.036 J**	**0.041 J**	0.028 U	0.090 U	**0.032 J**
CB340	1st Ave S SD (west)	0.16 UJ	0.026 UJ	0.046 UJ	**0.22 J**	**0.52 J**	0.088 UJ	**0.25 J**	0.027 UJ	0.046 UJ	0.028 UJ	0.030 UJ	0.047 UJ	0.056 UJ	0.19 UJ	**0.87 J**
ODS69	1st Ave S SD (west)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS70	1st Ave S SD (west)	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
7TH-ST1	7th Ave S SD	0.13 UJ	0.022 UJ	**1.1 J**	**0.20 J**	**0.76 J**	**1.3 J**	**0.047 J**	**0.028 J**	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	0.048 UJ	0.16 UJ	**0.31 J**
7TH-ST1	7th Ave S SD	0.079 U	0.013 U	0.023 U	**1.7**	0.18 U	**0.33**	0.022 U	0.014 U	0.023 U	0.014 U	0.015 U	0.024 U	0.028 U	0.093 U	**0.35**
7TH-ST2	7th Ave S SD	0.027 UJ	0.0044 UJ	0.0078 UJ	**0.57 J**	**0.42 J**	**0.62 J**	**0.0082 J**	0.0046 UJ	0.0077 UJ	0.0047 UJ	0.0050 UJ	0.0079 UJ	0.0096 UJ	0.031 UJ	**0.11 J**
7TH-ST2	7th Ave S SD	0.026 U	0.0043 U	0.0075 U	0.014 U	0.057 UJ	0.014 U	0.0071 U	0.0044 U	0.0074 U	0.0045 U	0.0048 U	0.0076 U	0.0092 U	0.030 U	0.0079 U
7TH-ST3	7th Ave S SD	0.13 UJ	0.022 UJ	0.039 UJ	**0.86 J**	**1.4 J**	**1.8 J**	**0.061 J**	0.023 UJ	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	0.048 UJ	0.16 UJ	**0.29 J**
HP-ST4	Highland Park Wy SW SD	0.13 UJ	0.022 UJ	0.039 UJ	0.073 UJ	0.30 UJ	0.074 UJ	0.037 UJ	0.023 UJ	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	0.048 UJ	0.16 UJ	**0.12 J**
HP-ST6	Highland Park Wy SW SD	0.13 UJ	0.022 UJ	0.039 UJ	**0.099 J**	**0.93 J**	**0.41 J**	**0.043 J**	**0.052 J**	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	**0.073 J**	0.16 UJ	**0.25 J**
HP-ST6	Highland Park Wy SW SD	0.026 U	0.0044 U	**0.049**	**0.10**	**2.1**	**0.58**	**0.030**	**0.082**	0.0076 U	0.0046 U	0.0049 U	0.0078 U	0.0094 U	**0.070 J**	**0.25**
SL4-T6	I-5 SD at Slip 4	0.13 UJ	0.022 UJ	0.039 UJ	**1.4 J**	**0.67 J**	**0.24 J**	**0.13 J**	**0.040 J**	0.039 UJ	0.024 UJ	0.025 UJ	0.040 UJ	0.048 UJ	0.16 UJ	**0.36 J**
SL4-T6	I-5 SD at Slip 4	**0.12 J**	**0.094**	0.023 U	0.044 U	0.18 UJ	0.044 U	**0.11**	0.014 U	0.023 U	**0.10**	**0.045 J**	**0.040 J**	0.029 U	0.093 U	0.025 U
MH101	S Brighton St SD	0.13 U	0.022 U	0.039 U	0.073 U	**0.40 J**	0.074 U	**0.040 J**	**0.030 J**	0.039 U	0.024 U	0.025 U	0.040 U	**0.068 J**	0.16 U	**0.14**
CB349	S Garden St SD	0.13 U	0.022 U	0.039 U	**4.7**	0.30 U	**0.11**	**0.086 J**	**0.097 J**	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	**0.43**
MH211	S River St SD	0.13 U	0.022 U	0.039 U	0.073 U	**0.54 J**	0.074 U	**0.10**	0.023 U	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	**0.074 J**
ODS58	S River St SD	0.13 U	0.021 U	0.037 U	0.07 U	0.28 U	0.071 U	**0.67**	**0.027 J**	0.039 U	0.023 U	0.024 U	0.038 U	0.045 U	0.15 U	**0.084 J**
KN-ST1	SW Kenny St SD/T115 CSO	0.13 U	0.022 U	0.039 U	**0.076 J**	**0.65 J**	**1.2**	**0.068 J**	**0.041 J**	0.038 U	0.023 U	0.025 U	0.039 U	0.047 U	0.15 U	**0.25**
LOWER REACH																
CB176	Diagonal Ave S CSO/SD	0.40 U	0.066 U	0.12 U	**0.53**	0.88 U	0.22 U	**0.11 J**	0.069 U	0.12 U	0.071 U	0.075 U	0.12 U	0.14 U	0.47 U	**0.24 J**
CB237	Diagonal Ave S CSO/SD	0.39 U	0.065 U	0.12 U	**5.0**	0.87 U	**0.71**	**0.20 J**	**0.081 J**	0.11 U	0.070 U	0.074 U	0.12 U	**0.28 J**	0.46 U	**0.40**
CB336	Diagonal Ave S CSO/SD	0.39 U	0.065 U	0.12 U	**0.24 J**	0.87 U	0.22 U	0.11 U	0.068 U	0.11 U	0.070 U	0.074 U	0.12 U	0.14 U	0.46 U	**0.16 J**
CB338	Diagonal Ave S CSO/SD	0.35 U	**0.44**	**0.20 J**	**8.7**	**11 J**	**1.7**	**0.50**	0.061 U	**0.30**	**0.48**	**0.18 J**	0.11 U	0.13 U	0.52 U	**2.1**
CB339	Diagonal Ave S CSO/SD	0.026 U	0.0043 U	**0.089**	**0.093**	**1.1 J**	**0.25**	**0.018 J**	**0.0047 J**	0.0075 U	0.0046 U	0.0048 U	0.0077 U	0.0092 U	0.030 U	**2.1**
CB341	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.22**	**0.41 J**	0.074 U	**0.16**	**0.20**	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	**0.22**
CB342	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**4.2**	**0.52 J**	0.074 U	**0.071 J**	**0.042 J**	0.038 U	0.024 U	0.025 U	0.039 U	0.047 U	0.16 U	**0.090 J**
CB343	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.21**	**1.0**	**1.3**	**0.87**	**0.35**	0.039 U	0.024 U	0.025 U	0.040 U	**0.26**	**3.1**	**0.16**
CB344	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.16**	0.30 U	0.074 U	**3.8**	**1.0**	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	**0.39 J**	**0.13**
CB345	Diagonal Ave S CSO/SD	0.15 U	0.026 U	0.045 U	**0.87**	**0.54 J**	0.085 U	**0.11 J**	**0.040 J**	0.044 U	0.027 U	0.029 U	0.046 U	0.055 U	0.18 U	**0.17**
MH10	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	0.073 U	**0.30 J**	0.074 U	**0.10**	0.023 U	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	**0.062 J**

Appendix F-2.
SPU Source Tracing Results (2019)
(All concentrations in mg/kg except as noted.)

Station ID	Outfall	2,6-Dinitro toluene	2-Chloro naphthalene	2-Methyl phenol	4-Methyl-phenol	Benzoic acid	Benzyl alcohol	Carbazole	Dibenzo-furan	Iso-phorone	Hexachloro benzene	Hexachloro butadiene	Nitro benzene	n-Nitroso-diphenyl-amine	Pentachloro-phenol	Phenol
SCO		na	na	0.063	0.67	0.65	0.057	--	0.54	--	0.022	0.011	na	0.028	0.36	0.42
CSL/RAL/Method A		na	na	0.063	0.67	0.65	0.073	--	0.54	--	0.070	0.12	na	0.040	0.69	1.2
MH18	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.23**	**0.92 J**	0.074 U	**0.38**	**0.28**	0.039 U	0.024 U	0.025 U	0.04 U	0.048 U	0.16 U	**0.15**
MH48	Diagonal Ave S CSO/SD	0.026 U	0.0043 U	0.0076 U	0.014 U	0.057 U	0.015 U	0.0071 U	0.0045 U	0.0075 U	0.0046 U	0.0049 U	0.0077 U	0.0093 U	0.03 U	**0.021**
MH49	Diagonal Ave S CSO/SD	**0.78 J**	**0.51**	**0.13 J**	**0.44**	**3.9 J**	**0.70**	**0.67**	0.071 U	**0.35**	**0.54**	**0.15 J**	0.12 U	0.15 U	0.48 U	**0.67**
MH50	Diagonal Ave S CSO/SD	0.027 U	0.0044 U	0.0078 U	0.015 U	0.059 UJ	0.015 U	0.0074 U	0.0046 U	0.0077 U	0.0047 U	0.0050 U	0.0079 U	0.0096 U	0.031 U	**0.0099 J**
MH52	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.087 J**	**0.38 J**	0.074 U	**0.10**	**0.047 J**	0.039 U	0.024 U	0.025 U	0.04 U	0.048 U	0.16 U	**0.10**
MH53	Diagonal Ave S CSO/SD	0.14 U	0.023 U	0.040 U	0.075 U	0.30 U	0.076 U	0.038 U	0.024 U	0.040 U	0.024 U	0.026 U	0.041 U	0.049 U	0.16 U	**0.051 J**
MH57	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MH58	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MH58	Diagonal Ave S CSO/SD	0.21 U	0.0044 U	0.0078 U	**0.076**	**0.19 J**	**0.019 J**	**0.012 J**	**0.0066 J**	0.0077 U	0.0047 U	0.0050 U	0.0079 U	0.0096 U	0.031 U	**0.070**
MH59	Diagonal Ave S CSO/SD	0.027 U	0.0044 U	0.0078 U	**0.045**	**0.42**	**0.069**	**0.024**	**0.012 J**	0.0077 U	0.0047 U	0.0050 U	0.0079 U	0.0095 U	0.031 U	**0.14**
MH61	Diagonal Ave S CSO/SD	0.15 U	0.025 U	0.045 U	**0.10 J**	**1.1 J**	**0.13**	0.042 U	0.026 U	0.044 U	0.027 U	0.029 U	0.046 U	0.055 U	0.18 U	**0.18**
MH62	Diagonal Ave S CSO/SD	0.078 U	0.013 U	**0.035 J**	**0.088**	**1.4**	**0.15**	**0.060**	**0.046 J**	0.023 U	0.014 U	0.015 U	0.023 U	**0.087**	0.091 U	**0.27**
MH63	Diagonal Ave S CSO/SD	0.16 U	0.027 U	0.047 U	**0.47**	**2.2**	**0.21**	**0.15**	**0.063 J**	0.046 U	0.028 U	0.030 U	0.048 U	**0.13**	0.19 U	**0.80**
MH64	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MH65	Diagonal Ave S CSO/SD	0.16 U	0.027 U	0.047 U	0.088 U	0.35 U	0.089 U	0.044 U	0.028 U	0.046 U	0.028 U	0.030 U	0.047 U	0.057 U	0.19 U	0.049 U
ODS72	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS73	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS74	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ODS75	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB91	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB92	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB92	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
RCB93	Diagonal Ave S CSO/SD	0.16 U	0.027 U	0.047 U	**0.12 J**	**0.87 J**	0.089 U	**0.069 J**	0.028 U	0.046 U	0.028 U	0.030 U	0.048 U	0.057 U	0.19 U	**0.13**
ST09	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ST1	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.56**	0.29 U	**0.15**	**0.15**	**0.056 J**	0.039 U	0.024 U	0.025 U	0.040 U	**0.080 J**	0.16 U	**0.24**
ST1	Diagonal Ave S CSO/SD	0.026 U	0.0043 U	0.0076 U	0.014 U	0.057 U	0.014 U	**0.030**	**0.0065 J**	0.0075 U	0.0046 U	0.0048 U	0.0077 U	0.0093 U	0.030 U	**0.014 J**
ST1	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ST1	Diagonal Ave S CSO/SD	0.027 U	0.0044 U	0.0078 U	**0.019 J**	0.059 U	0.015 U	**0.019 J**	0.0046 U	0.0077 U	0.0047 U	0.0050 U	0.0079 U	0.0095 U	0.031 U	**0.013 J**
ST10	Diagonal Ave S CSO/SD	0.23 UJ	0.039 UJ	0.068 UJ	**0.15 J**	**2.2 J**	0.13 UJ	**0.13 J**	**0.10 J**	0.068 UJ	0.041 UJ	0.044 UJ	0.069 UJ	0.083 UJ	0.27 UJ	**0.55 J**
ST2	Diagonal Ave S CSO/SD	0.026 U	0.0044 U	0.0077 U	0.015 U	0.058 U	0.015 U	0.0073 U	0.0046 U	0.0077 U	0.0047 U	0.0050 U	0.0079 U	0.0095 U	0.031 U	0.0081 U
ST2 (RORY)	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.34**	**0.68 J**	**0.082 J**	**0.074 J**	**0.034 J**	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	**0.14**
ST2 (TRENT)	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.39**	**0.93 J**	**0.47**	**0.088 J**	0.023 U	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	**0.22**
ST2 (SIFT)	Diagonal Ave S CSO/SD	0.13 U	0.022 U	0.039 U	**0.20**	**0.75 J**	**0.14**	**0.059 J**	0.023 U	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	**0.14**
ST2 (HAMLIN)	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
ST7	Diagonal Ave S CSO/SD	0.13 UJ	0.022 UJ	0.038 UJ	**4.4 J**	**0.53 J**	**0.38 J**	**0.060 J**	0.023 UJ	0.038 UJ	0.023 UJ	0.025 UJ	0.039 UJ	0.047 UJ	0.15 UJ	**0.69 J**
ST7	Diagonal Ave S CSO/SD	0.026 U	0.0043 U	0.0077 U	0.014 U	0.058 U	0.015 U	**0.011 J**	0.0045 U	0.0076 U	0.0046 U	0.0049 U	0.0078 U	0.0094 U	0.031 U	**0.017 J**
ST8	Diagonal Ave S CSO/SD	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
MH56	S Nevada St SD	0.027 U	0.0044 U	0.0078 U	**0.28**	0.058 U	0.015 U	**0.015 J**	**0.011 J**	0.0077 U	0.0047 U	0.0050 U	0.0079 U	0.0095 U	0.031 U	**3.1**
RCB86	S Nevada St SD	0.67 U	0.11 U	0.20 U	**3.4**	1.5 U	0.37 U	**7.7**	**2.4**	0.19 U	0.12 U	0.13 U	0.20 U	0.24 U	0.78 U	0.21 U
RCB88	S Nevada St SD	0.13 U	0.022 U	0.039 U	**0.87**	0.29 U	0.074 U	**0.46**	**0.19**	0.039 U	0.024 U	0.025 U	0.040 U	0.048 U	0.16 U	**0.41**
RCB89	S Nevada St SD	0.39 U	0.065 U	0.12 U	**2.5**	0.87 U	0.22 U	**0.76**	**0.30**	0.11 U	0.069 U	0.073 U	0.12 U	0.14 U	0.46 U	0.12 U
RCB200A	SW Dakota St SD/Ditch	0.40 U	0.066 U	0.12 U	**0.46**	0.88 U	**0.53**	0.11 U	0.069 U	0.12 U	0.071 U	0.075 U	0.12 U	0.14 U	0.47 U	**0.23 J**
ID-ST1	SW Idaho St SD	0.67 UJ	0.11 UJ	0.20 UJ	**2.6 J**	1.5 UJ	0.37 UJ	0.18 UJ	0.12 UJ	0.19 UJ	0.12 UJ	0.13 UJ	0.20 UJ	0.24 UJ	0.78 UJ	**0.59 J**
ID-ST2	SW Idaho St SD	0.027 UJ	0.0044 UJ	0.0078 UJ	**0.22 J**	**0.70 J**	**0.48 J**	**0.053 J**	**0.024 J**	0.0077 UJ	0.0047 UJ	0.0050 UJ	0.0079 UJ	0.0096 UJ	0.031 UJ	**0.14 J**
ID-ST3	SW Idaho St SD	0.22 UJ	0.036 UJ	0.064 UJ	**0.29 J**	**1.3 J**	**1.2 J**	0.060 UJ	0.037 UJ	0.063 UJ	0.038 UJ	0.041 UJ	0.064 UJ	0.078 UJ	0.25 UJ	**0.23 J**

Sample result is above the CSL/RAL/Method A screening level
Sample result is above the SCO but below the CSL
Analyte was not detected, but detection limit is above the SCO
Screening levels are presented in Table 2-4.
na - not analyzed
Only analytes detected in at least one sample are shown.
Detections are shown in **bold** font.

Appendix G:
King County Source Tracing Data (2019)

Appendix G-1
King County Source Tracing
Sample Locations (2019)

Station ID	Sample No.	Date	Type	Sewer Type	Source Control Area	Outfall	Description	X Coordinate	Y Coordinate
Upper Reach									
96-ST1	L72031-1	3/19/2019	Sediment Trap	SD	RM 3.8-4.2 West (Sea King Industrial Area)	S 96th Street SD	Traps in 8-ft deep type 2 catch basin with slotted lid, just east of the lawn of Delta Marine's admin builiding and just north of S 96th Street.	1275076.00	192295.60
LDW_SG3	L72031-2	3/26/2019	ROW Catch Basin	SD	RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge)	16th Ave S SD (East)	Type-2 catch basin with rectangular slotted lid located in bike lane of southbound approach to South Park Bridge.	1274773.00	197443.30
KCIA1A	KCIA1A Trap	12/17/2019	Sediment Trap	SD	RM 3.9-4.3 East (Slip 6)	KCIA SD#1	KC Airport SD #1 at Slip 6, MH east of E Marginal Wy S, upstream of former sampling location KCIA1	1278547.80	193860.70
KCIA1A	KCIA1A Grab	12/17/2019	Catch Basin Grab	SD	RM 3.9-4.3 East (Slip 6)	KCIA SD#1	KC Airport SD #1 at Slip 6, MH east of E Marginal Wy S, upstream of former sampling location KCIA1	1278547.80	193860.70
KCIA1UP	KCIA1UP Grab	12/17/2019	Catch Basin Grab	SD	RM 3.9-4.3 East (Slip 6)	KCIA SD#1	KC Airport SD#1 at upstream boundary of KCIA along Perimeter Road S	1279714.80	194265.00
Middle Reach									
WDUWAM.W14-224	L72424-1	5/16/2019	Sediment Trap	CS	RM 1.6-2.1 West (Terminal 115)	Terminal 115 CSO	Manhole just north of W. Marginal Pump Station (T115 CSO)	1268203.38	200297.25
SL4-T5C	SL4-T5C Grab	12/17/2019	Catch Basin Grab	SD	RM 2.8 East (EAA-3: Slip 4)	KCIA SD#3	KCIA SD#3, north lateral, upstream of NBF and location SL4-T5A	1274056.75	201619.50
SL4-T4A	SL4-T4A Grab	12/17/2019	Catch Basin Grab	SD	RM 2.8 East (EAA-3: Slip 4)	KCIA SD#3	KCIA SD#3, north-central lateral, upstream of NBF	1274851.00	200710.00
SL4-T3A	SL4-T3A Trap	12/17/2019	Sediment Trap	SD	RM 2.8 East (EAA-3: Slip 4)	KCIA SD#3	KCIA SD#3, south-central lateral, upstream of NBF, downstream of KCIA runway	1275726.22	199160.79
SL4-T3A	SL4-T3A Grab	12/17/2019	Catch Basin Grab	SD	RM 2.8 East (EAA-3: Slip 4)	KCIA SD#3	KCIA SD#3, south-central lateral, upstream of NBF, downstream of KCIA runway	1275726.22	199160.79
SL4-T2A	SL4-T2A Trap	12/17/2019	Sediment Trap	SD	RM 2.8 East (EAA-3: Slip 4)	KCIA SD#3	KCIA SD#3, south lateral, upstream of NBF, downstream of KCIA runway	1275936.17	198779.19
SL4-T2A	SL4-T2A Grab	12/17/2019	Catch Basin Grab	SD	RM 2.8 East (EAA-3: Slip 4)	KCIA SD#3	KCIA SD#3, south lateral, upstream of NBF, downstream of KCIA runway	1275936.17	198779.19
Lower Reach									
HNFORD.21	L72424-3	5/16/2019	Sediment Trap	CS	Combined Sewer Area	Duwamish/Diagonal CSO/SD	Near Rainier Avenue S & S Estelle Street (Hanford #1 CSO Basin)	1279899.13	211986.81
HNFORD.MS-204	L72424-2	5/16/2019	Sediment Trap	CS	Combined Sewer Area	Duwamish/Diagonal CSO/SD	Near S Hanford Street & Martin Luther King Jr Way S (Hanford #1 CSO Basin)	1279207.85	213225.16

SD = storm drain
CS = combined sewer

Appendix G-2
King County Source Tracing Sample Results (2019)
All concentrations in mg/kg DW except as noted

Station ID	Date Sampled	Total Organic Carbon (Percent)	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Silver	Vanadium	Zinc	Diesel Oil Range HC	Motor Oil Range HC	Aroclor 1242	Aroclor 1254	Aroclor 1260	Total PCB Aroclors	1-Methyl-naphthalene	2-Methyl-naphthalene	Acenaph-thene	Acenaph-thylene	Anthra-cene	Fluorene
SCO		NA	57	5.1	260	390	450	0.41	--	6.1	--	410	2,000	2,000	--	--	--	0.13	--	0.67	0.50	1.3	0.96	0.54
CSL/RAL/Method A		NA	93	6.7	270	390	530	0.59	--	6.1	--	960	2,000	2,000	--	--	--	1.0	--	0.67	0.50	1.3	0.96	0.54
Upper Reach																								
96-ST1	3/19/2019	6.85	**35**	2.4 U	**32**	**64**	**51**	na	**45**	4.7 U	**58**	**690**	na	na	na	na	na	na	0.061 U	0.061 UJ	**0.12 J**	na	**0.41 J**	**0.18 J**
LDW_SG3	3/26/2019	na	**4.6 J**	**1.2**	**46**	**120 J**	**39**	na	**29 J**	0.84 U	**38**	**680**	na	na	na	na	na	na	na	na	na	na	na	na
KCIA1A Trap	12/17/2019	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
KCIA1A Grab	12/17/2019	2.1	**25**	na	na	**45**	**26**	0.4 U	na	na	na	**300**	99 U	**280**	0.20 U	0.20 U	0.20 U	0.20 U	na	0.026 U	0.03 U	0.03 U	**0.07**	0.03 U
KCIA1Up Grab	12/17/2019	0.9	**11**	na	na	**41**	**52**	0.12 U	na	na	na	**230**	30 U	**110**	0.060 U	0.060 U	0.060 U	0.060 U	na	0.008 U	0.01 U	0.01 U	**0.010**	0.01 U
Middle Reach																								
ST_WDUWAM.W14-224	5/16/2019	13.6	**3.9**	**0.67 J**	**86 J**	**251 J**	**59 J**	**1.4 J**	**44**	**0.77**	**19**	**530**	na	na	**0.012 J**	**0.03 J**	0.0088 U	**0.038 J**	0.88 U	0.88 U	0.88 U	na	0.88 U	0.88 U
SL4-T5C Grab	12/17/2019	4.7	**3.1**	na	na	**14**	**21**	0.14 U	na	na	na	**79**	34 UJ	**190**	0.069 U	0.07 U	0.069 U	0.069 U	na	**0.053**	**0.04**	**0.030**	**0.1**	**0.038**
SL4-T4A Grab	12/17/2019	0.9	**28**	na	na	**110**	**42**	0.13 U	na	na	na	**1,100**	33 U	**310**	0.066 U	0.07 U	0.066 U	0.07 U	na	0.0090 U	**0.010**	**0.01**	**0.04**	**0.013**
SL4-T3A Trap	12/17/2019	6.1	**17**	na	na	**100**	**30**	0.59 U	na	na	na	**170**	**170**	**990**	0.30 U	0.30 U	0.30 U	0.30 U	na	0.039 U	0.04 U	**0.05**	**0.12**	**0.06**
SL4-T3A Grab	12/17/2019	0.72	**3.2**	na	na	**16**	**5.5**	0.16 U	na	na	na	**39**	40 U	**320**	0.079 U	0.08 U	0.079 U	0.079 U	na	0.011 U	0.011 U	0.01 U	**0.016**	0.011 U
SL4-T2A Trap	12/17/2019	23	**19**	na	na	**250**	**250**	0.91 U	na	na	na	**2,500**	**2,200**	#####	0.91 U	0.91 U	0.91 U	0.91 U	na	na	na	na	na	na
SL4-T2A Grab	12/17/2019	2.8	**48**	na	na	**83**	**260**	0.13 U	na	na	na	**1,600**	160 U	**2,000**	0.064 U	0.06 U	0.06 U	0.06 U	na	0.085 U	0.09 U	0.09 U	0.09 U	0.09 U
Lower Reach																								
ST_HNFORD.21	5/16/2019	9.08	**7.0**	**0.99**	**63 J**	**220**	**190 J**	**1.4 J**	**49**	**2.5**	**47**	**610**	na	na	0.015 UJ	**0.02 J**	**0.043 J**	**0.065 J**	**0.019 J**	**0.018 J**	**0.03 J**	na	**0.16**	**0.04**
ST_HNFORD.MS-204	5/16/2019	10.2	**5.2**	**0.69**	**36 J**	**130**	**100 J**	**0.60 J**	**39**	**10**	**32**	**430**	na	na	##### U	**0.022 J**	**0.0086 J**	**0.031 J**	0.10 U	0.10 U	0.10 U	na	0.10 U	0.10 U

Sample result is above the CSL/RAL/Method A screening level
Sample result is above the SCO but below the CSL
Analyte was not detected, but detection limit is above the SCO
Screening levels are presented in Table 2-4.
na - not analyzed
Only analytes detected in at least one sample are shown.
Detections are shown in **bold** font.

Appendix G-2
King County Source Tracing Sample Results (2019)
All concentrations in mg/kg DW except as noted

Station ID	Naphtha-lene	Phenan-threne	Total LPAH	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(g,h,i) perylene	Total Benzo-fluoranthenes	Chrysene	Dibenzo(a,h) anthracene	Fluoran-thene	Indeno (1,2,3-cd) pyrene	Pyrene	Total HPAH	Total cPAH TEQ	BEHP	Butylbenzyl phthalate	Dibutyl phthalate	Diethyl phthalate	Dimethyl phthalate	Di-n-octyl phthalate	1,4-Dichloro benzene
SCO	2.1	1.5	5.2	1.3	1.6	0.67	3.2	1.4	0.23	1.7	0.60	2.6	12	1.0	1.3	0.063	1.4	0.20	0.071	6.2	0.11
CSL/RAL/Method A	2.1	1.5	5.2	1.6	1.6	0.72	3.6	2.8	0.23	2.5	0.69	3.3	17	1.0	1.9	0.90	1.4	1.2	0.16	6.2	0.11
Upper Reach																					
96-ST1	0.061 UJ	**1.7 J**	**2.4 J**	**1.0 J**	**0.86 J**	**0.44 J**	**1.8 J**	**1.1 J**	0.12 UJ	**2.3 J**	**0.47 J**	**2.2 J**	**10 J**	**1.2 J**	**4.6 J**	0.091 UJ	0.61 UJ	0.61 UJ	**0.78**	0.12 UJ	0.091 U
LDW_SG3	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
KCIA1A Trap	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
KCIA1A Grab	0.03 U	**0.44**	**0.51**	**0.45**	**0.53**	**0.42**	**1.2**	**0.66**	**0.076**	**1.2**	**0.43**	**1.0**	**6.0**	**0.75**	1.8	0.66 U	0.66 U	0.66 U	0.13 U	0.66 U	na
KCIA1Up Grab	0.01 U	**0.08**	**0.09**	**0.062**	**0.08**	**0.074**	**0.14**	**0.084**	**0.012**	**0.15**	**0.08**	**0.13**	**0.80**	**0.10**	0.40 U	0.40 U	0.40 U	0.40 U	0.080 U	0.40 U	na
Middle Reach																					
ST_WDUWAM.W14-224	0.88 U	1.8 U	0.88 U	2.2 U	0.88 U	0.88 U	0.88 U	0.88 U	1.8 U	0.88 U	0.88 U	4.4 U	0.88 U	0.73 U	**8.2**	1.3 U	0.88 U	8.8 U	4.4 U	1.8 U	1.3 U
SL4-T5C Grab	**0.04**	**0.77**	**1.0**	**0.69**	**1.0**	**1.0**	**2.7**	**1.2**	**0.20**	**1.9**	**1.0**	**1.7**	**11**	**1.5**	0.46 U	0.46 U	0.46 U	0.46 U	0.092 U	0.46 U	na
SL4-T4A Grab	0.009 U	**0.22**	**0.30**	**0.18**	**0.25**	**0.22**	**0.60**	**0.34**	**0.051**	**0.47**	**0.23**	**0.42**	**2.8**	**0.36**	0.44 U	0.44 U	0.44 U	0.44 U	0.088 U	0.44 U	na
SL4-T3A Trap	0.04 U	**0.73**	**0.96**	**0.56**	**0.95**	**1.1**	**3.1**	**1.7**	**0.26**	**2.1**	**1.1**	**1.7**	**13**	**1.5**	**3.0**	2.0 U	2.0 U	2.0 U	0.39 U	2.0 U	na
SL4-T3A Grab	0.011 U	**0.13**	**0.15**	**0.075**	**0.13**	**0.15**	**0.31**	**0.16**	**0.025**	**0.20**	**0.15**	**0.18**	**1.4**	**0.19**	0.53 U	0.53 U	0.53 U	0.53 U	0.11 U	0.53 U	na
SL4-T2A Trap	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
SL4-T2A Grab	0.09 U	**0.40**	**0.40**	**0.37**	**0.54**	**0.51**	**1.5**	**0.98**	**0.10**	**1.2**	**0.55**	**0.92**	**6.7**	**0.80**	11 U	11 U	11 U	11 U	2.1 U	11 U	na
Lower Reach																					
ST_HNFORD.21	0.03 U	**0.21**	**0.44 J**	0.072 U	0.03 U	0.029 U	**0.62**	0.029 U	0.058 U	**0.57**	0.03 U	**0.47**	**1.7**	####	**3.8**	0.043 U	0.029 U	0.29 U	1.5 U	0.058 U	0.04 U
ST_HNFORD.MS-204	0.10 U	**0.14 J**	**0.14 J**	0.26 U	**0.25**	**0.12**	**0.42**	0.10 U	0.21 U	**0.44**	**0.11**	**0.38**	**1.7**	**0.33**	**4.0**	0.16 U	0.10 U	1.0 U	5.2 U	**1.4**	**0.13 J**

Appendix G-2
King County Source Tracing Sample Results (2019)
All concentrations in mg/kg DW except as noted

Station ID	2-Methyl pheno	3, 4-Methyl-phenol	Benzoic acid	Benzyl alcohol	Carbazole	Dibenzo-furan	Pentachl oro-phenol	Phenol
SCO	0.063	--	0.65	0.057	--	0.54	0.36	0.42
CSL/RAL/Method A	0.063	--	0.65	0.073	--	0.54	0.69	1.2
Upper Reach								
96-ST1	0.30 UJ	0.30 UJ	**1.5 J**	0.30 U	**0.18 J**	**0.06 J**	1.2 U	0.30 U
LDW_SG3	na	na	na	na	na	na	na	na
KCIA1A Trap	na	na	na	na	na	na	na	na
KCIA1A Grab	na	na	na	na	na	na	na	na
KCIA1Up Grab	na	na	na	na	na	na	na	na
Middle Reach								
ST_WDUWAM.W14-224	4.4 U	**100**	**28 J**	4.4 U	0.88 U	0.88 U	**14 J**	4.4 U
SL4-T5C Grab	na	na	na	na	na	na	na	na
SL4-T4A Grab	na	na	na	na	na	na	na	na
SL4-T3A Trap	na	na	na	na	na	na	na	na
SL4-T3A Grab	na	na	na	na	na	na	na	na
SL4-T2A Trap	na	na	na	na	na	na	na	na
SL4-T2A Grab	na	na	na	na	na	na	na	na
Lower Reach								
ST_HNFORD.21	0.15 U	**0.60**	**7.2 J**	1.5 U	0.029 U	**0.030**	5.8 U	0.15 U
ST_HNFORD.MS-204	**0.45 J**	**48**	**23 J**	5.2 U	0.10 U	0.10 U	**15 J**	**2.7**

Figures

Figure 1-1. Lower Duwamish Waterway Source Area

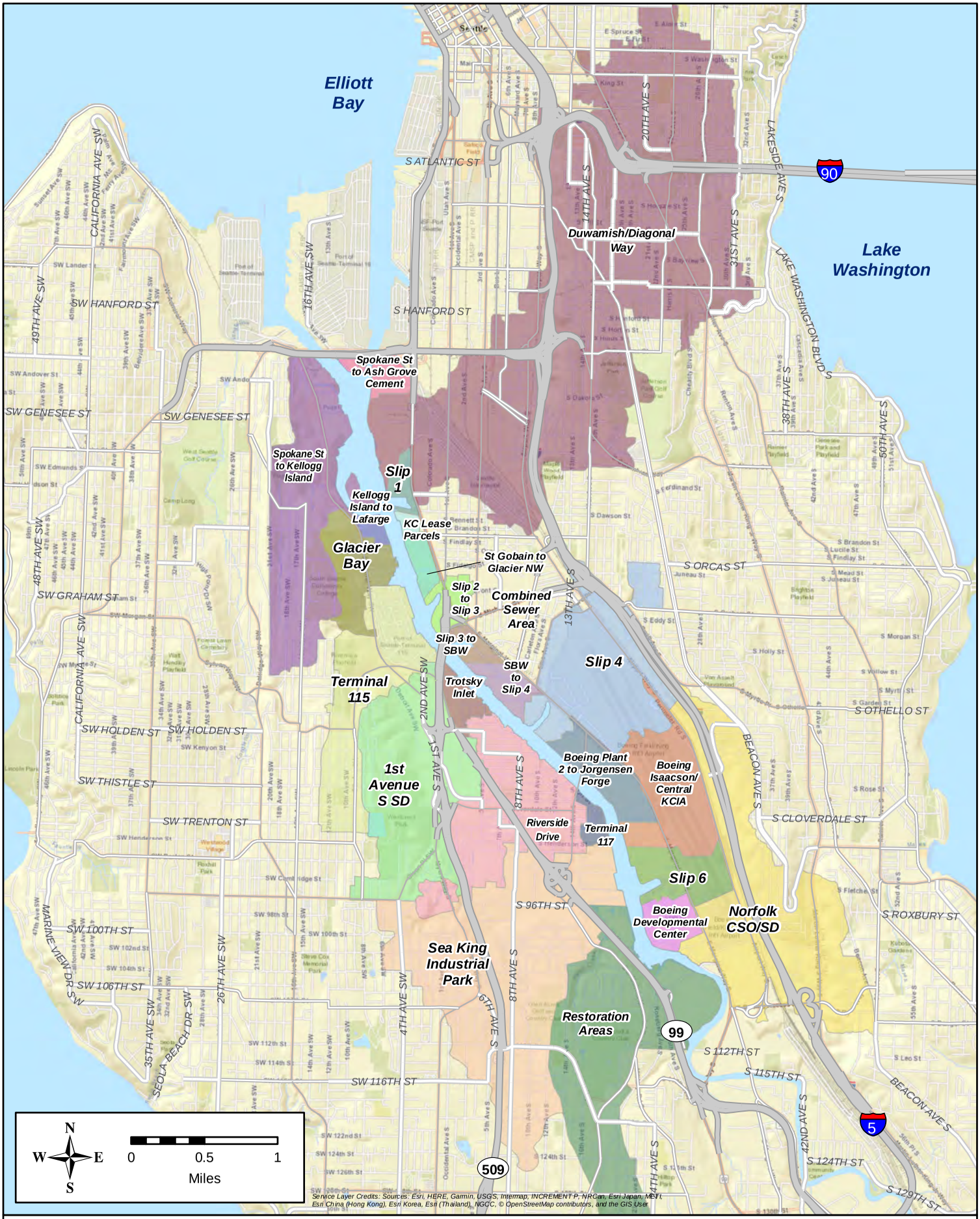

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Figure 1-2. Lower Duwamish Waterway Source Control Areas

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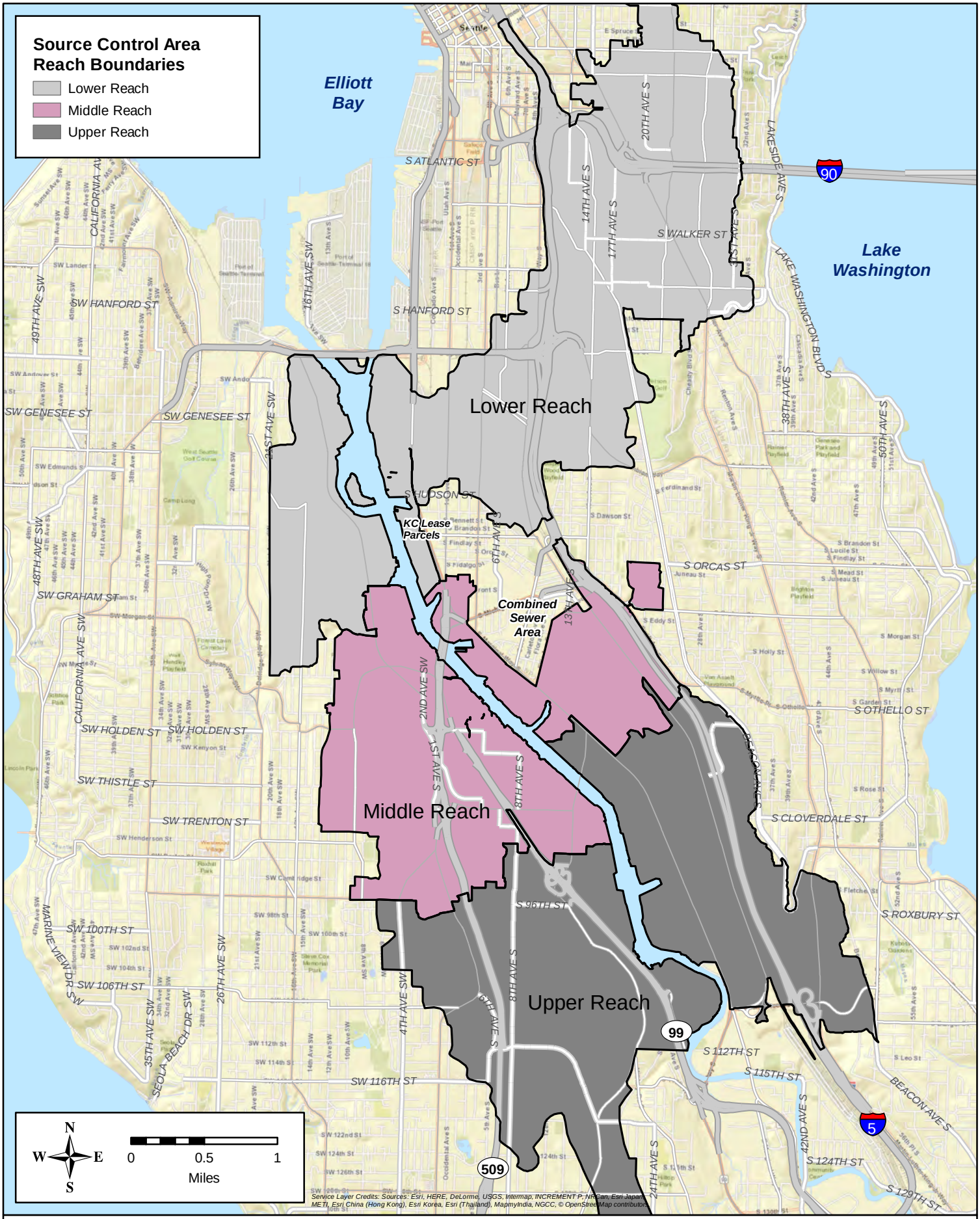

Figure 1-3. Lower Duwamish Waterway Reach Boundaries

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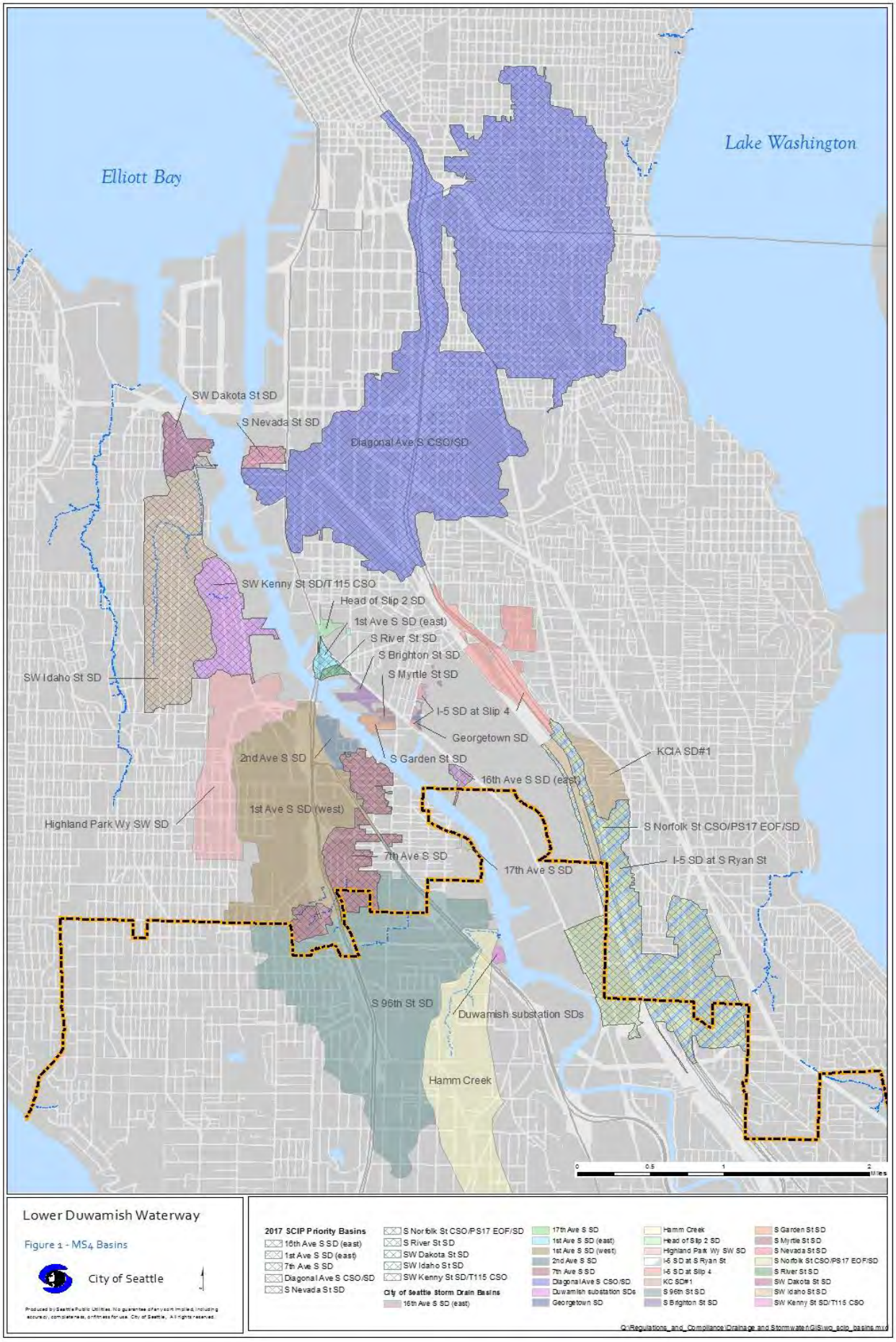
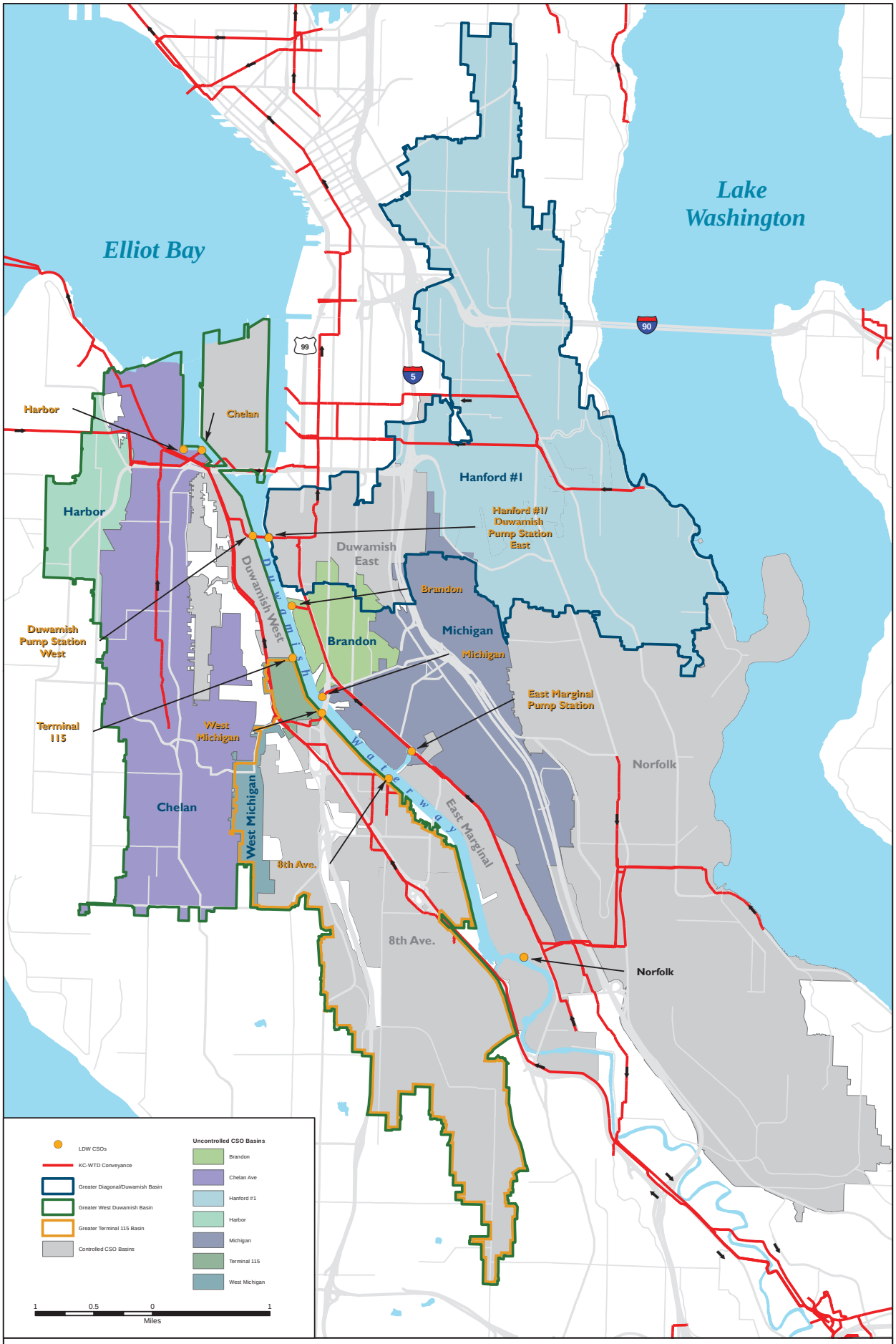


Figure 2-2. Seattle Storm Drain Basins in the Lower Duwamish Waterway



King County
Department of Natural Resources and Parks
Wastewater Treatment Division

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June 2014

Figure 2-2
Lower Duwamish Waterway
Combined Sewer Overflow Basins

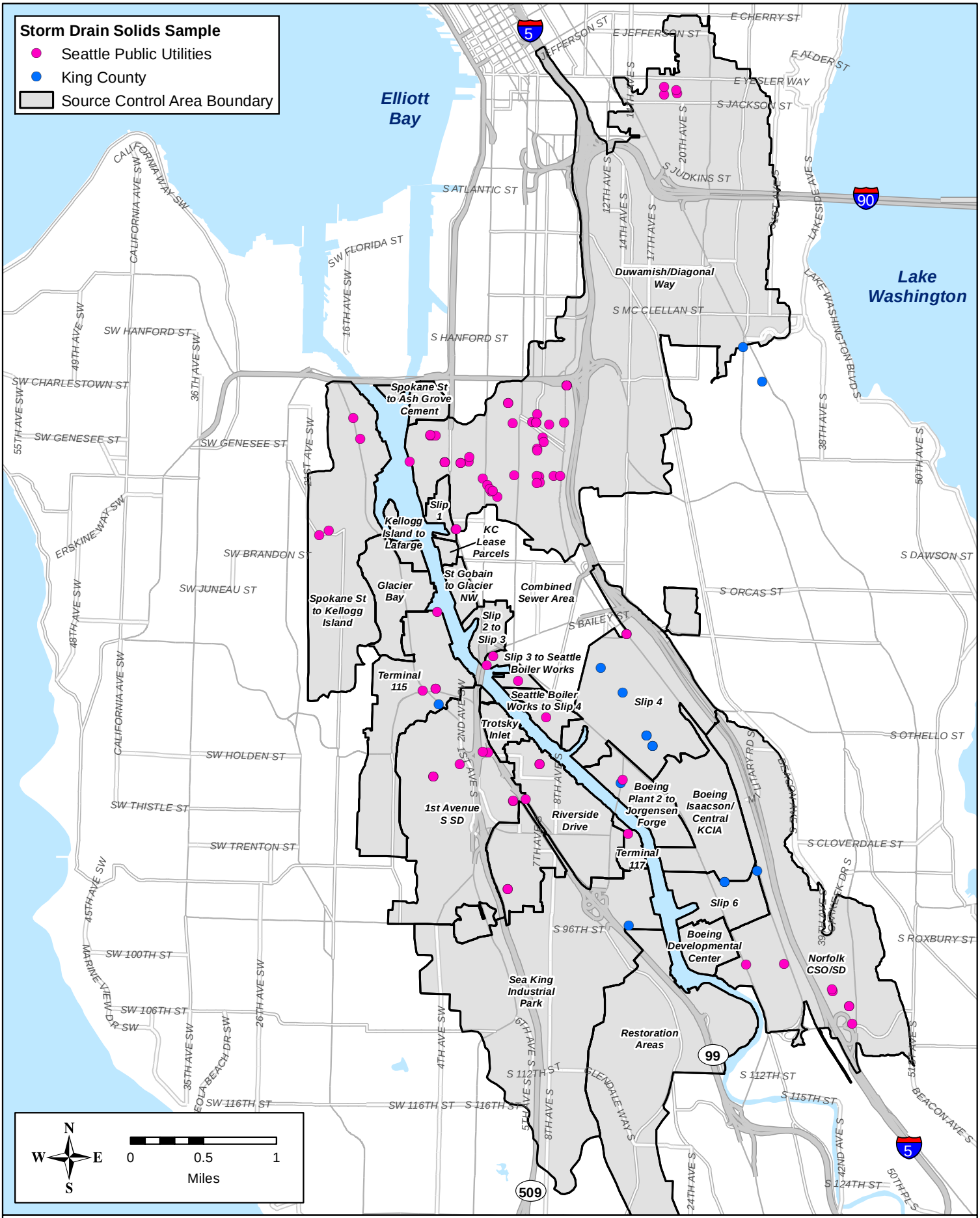

Figure 2-3. Source Tracing Sample Locations in the LDW Basin: 2019